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FOREWORD

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

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Monthly Message

Inasmuch as the article I wrote for this month's number of the *Journal* is too long for its usual place and will be found on page 713, I therefore offer for your earnest thought and concern one of the famous passages of literature concerning the physician, which comes from the Book of Ecclesiasticus, 38th chapter, and should be well known to all:

> 1 Honor the physician for the need thou hast of him: for the most High hath created him.
>
> 2 For all healing is from God: and he shall receive gifts of the king.
>
> 3 The skill of the physician shall lift up his head: and in the sight of great men he shall be praised.
>
> 4 The most High hath created medicines out of the earth: and a wise man will not abhor them.

Frank B. Berry

FRANK B. BERRY, M. D.
Assistant Secretary of Defense
(Health and Medical)

PREDICTION OF IMMEDIATE PSYCHIATRIC BREAKDOWN IN MILITARY SERVICE

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SINCE the beginning of World War II, a drastic reorientation has occurred in psychiatric screening of candidates for military service. Early in World War II, the primary orientation was toward the detection and elimination of the majority of potential psychiatric casualties prior to induction.[1,2] Experience soon showed that this goal was unattainable, because large numbers of psychiatric casualties occurred in spite of high rejection rates.[1,3] Postwar studies have produced abundant evidence that with our present knowledge, attempts to screen out any large proportion of potential psychiatric casualties are not likely to be effective.[3-5] These findings are especially significant because there is a relative manpower shortage which appears likely to continue for a long time to come.

When it became apparent that the high rejection rates of World War II were achieving less than expected in the way of preventing psychiatric breakdown, and that many potentially useful soldiers were being lost to the military service,[6-9] a sharp reaction occurred which led to the dictum, "Performance is the only test." This viewpoint, in its most extreme form, has sometimes led to the conclusion that psychiatric screening should be abandoned altogether, and that those who break down should be quickly separated from the service. For this and other reasons, rejection on psychiatric grounds has largely disappeared in some parts of the country.[10] There is no doubt that in recent years the trend has been toward lower rejection rates, and broadening of the interpretation of what constitutes acceptability for military service.[1,3,10,11] However, some psychiatric screening has continued. In general, the object of this screening has been only the exclusion of "the obviously unfit,"[5] or "grossly incapacitated."[12]

This seems to be a logical outcome of research in this field during and since World War II, but there is still considerable

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confusion and difference of opinion in applying even such a simple and gross criterion as "obviously unfit." This is reflected by the marked variability of rejection rates in different parts of the country.[10] Furthermore, there is considerable doubt if there is any correlation between the rejection rate and the neuropsychiatric casualty rate in any given area. Is the number of men breaking down in service actually decreased by screening procedures?[11] It is a widespread clinical impression that various military hospitals have many psychiatric patients who became ill soon after entry in service. Frequently, from his history, there is substantial reason to believe that such a patient showed gross indications of severe impairment at the time of induction, and might well have been eliminated by any reasonably effective screening procedure. While their number is small in terms of the absolute size of the army, in some parts of the country they constitute an important part of the psychiatric patient load of the Army Medical Service.

A logical first step, therefore, in current research on psychiatric screening is to determine whether or not effective screening procedures can be devised for this group of men who break down almost immediately on entrance into service, perform no effective service, often require considerable hospitalization, and sometimes become long-term psychiatric casualties under Veterans Administration or civilian care. To state the proposition in a somewhat oversimplified form: if any group of potential psychiatric casualties can be accurately screened, this group should be the one; if this group cannot be screened, accurate psychiatric screening is probably not possible in the light of present knowledge.

MATERIAL AND METHODS

An attempt was made to differentiate the "immediate breakdown" group from men who broke down later in their military careers. Ideally, such a differentiation should be made predictively, with the data collected on a large scale prior to induction, and a subsequent long-term follow-up. Before undertaking any such extensive project, we surveyed some readily available clinical records in a retrospective study, designed to provide some evidence for simple, clear-cut criteria which might prove to be the most effective predictors of immediate breakdown.

The two groups to be differentiated were defined as follows: "Immediate breakdowns" were patients admitted to a psychiatric ward within 30 days after entry into the military service; and "late breakdowns" were patients admitted to a psychiatric ward after a year or more of uninterrupted military service. In each group a random sample was obtained of admissions to the neuro-

psychiatric service of the hospital during the period from 1950 to 1952. Ninety-six cases in the immediate breakdown group, and 66 in the late breakdown group were selected for study. About two thirds of the immediate breakdown group were Air Force personnel, while four fifths of the late breakdown group were from the Army. The large proportion of airmen is accounted for by the fact that men entering the Air Force received basic training at nearby Lackland Air Force Base. Within each group, half the patients were from the closed psychiatric section and half from the open psychiatric section.

The average age of the immediate breakdown group was 20 years, and of the late breakdown group 27 years; the average lengths of service were 16 days and six and one-half years, respectively. The clinical records of each patient reviewed included the following:

1. The final clinical abstract of the psychiatrist, written immediately prior to the patient's discharge from the hospital, which included a summary of the patient's chart, and current and previous hospitalizations.

2. The original social histories in about 75 percent of the cases, obtained by psychiatric social workers from the patient, members of his military unit, and family (when available).

3. American Red Cross histories in 25 percent of the immediate group, and 15 percent of the late group obtained in the home community of the patients. From all of these sources of data, certain items of information were extracted and tabulated.

The two groups shared the following characteristics: (1) home section of country (all parts represented about equally, except for Pacific Coast); (2) rural or urban background (about equally divided in each group); (3) economic status; and (4) place in family order of siblings. The only notable difference in any of these respects was that 57 percent of the immediate group and 29 percent of the late group were in the "poor-to-fair" economic category.

RESULTS

Comparisons of the preservice record, diagnosis, and disposition of the immediate and late breakdown groups are shown in tables 1 and 2. The sharpest differentiation occurred on several items of preservice behavior, which in most cases mainly involved functional impairment sometime during the three years just prior to induction.

In the immediate breakdown group there was a much higher incidence of: (1) previous similar illness; (2) similar illness of severity equal to or greater than present illness; (3) hospitaliza-

TABLE 1. *Comparison of significant aspects of history of the immediate and late psychiatric breakdown groups*

History	Immediate breakdown group (96 patients)		Late breakdown group (66 patients)	
	Total group (percent)	Red Cross* history sample (24 patients) (percent)	Total group (percent)	Red Cross* history sample (10 patients) (percent)
Previous illness				
Any similar illness	69		15	
Severity at least equal to present illness	54	42	5	10
Hospitalization on psychiatric basis	34	29	3	
Emotional disturbance (in addition to above; different from present illness)	56	54	35	36
Extremely poor work record	50	54	6	
School record				
Failed one or more grades	28	25	3	
Major school difficulty	32	33	6	9
Severe interference with school and work due to subjective distress	47	54	8	
Severe impairment of patient's adjustment to family	43	54	18	
Death, divorce, or serious illness in parents	48	42	47	64
Mental illness in parents	39	42	24	10
Mental illness in siblings	14	30	3	10
Civilian disciplinary episodes	6		5	
Civilian disciplinary confinement	3		2	

*The Red Cross history samples were part of the total groups and included those patients whose history had been checked at the man's home town.

tion on psychiatric basis; (4) extremely poor work record; (5) failure in one or more grades in school; (6) other major school difficulty; (7) severe interference with both school and work due to subjective distress; and (8) poor family adjustment.

TABLE 2. *Comparison of diagnosis and disposition of immediate and late breakdown groups*

Type	Immediate breakdown group (96 patients) (percent)	Late breakdown group (66 patients) (percent)
Intelligence below average	13	5
Diagnosis		
Psychotic disorders without known organic cause	28	36
Psychiatric disorders with demonstrable physical cause	3	5
Psychoneurotic disorders	34	33
Character and behavior disorders	34	21
No psychiatric diagnosis justified	1	5
Disposition		
Duty	9	42
Administrative separation	62	9
Medical separation	26	42
Other	3	7

To minimize difficulty in evaluating each of these items standards were made relatively simple. They included:

1. *Previous similar illness.* Patient's current discomfort and interference with usual activities similar in most respects to an earlier distress for which he had sought medical help.

2. *Equal or greater severity.* The previous similar illness at least as severe as the current one, in terms of discomfort and functional impairment.

3. *Psychiatric hospitalization.* Admission to a psychiatric hospital or psychiatric service of a general hospital, or for a "nervous breakdown."

4. *Severe work impairment.* Any one or combination of:

(a) Failure to hold a job for more than a few months (excepting jobs interrupted by induction, and excepting the first year after leaving school).

(b) Repeated loss of days or weeks from job and interference with work performance because of subjective distress, attitude toward work, or interpersonal difficulties.

(c) Repeatedly discharged from jobs (for whatever reason).

(d) Unable to work except in the employ of a member of the family (that is, must include actual failure outside family).

(e) Able to work only part time (that is, must include failure at full-time work; does not include those still in school).

5. *School failure.* Failed one or more grades in school.

6. *Major school difficulty.* Includes two or more of the following:

(a) Left school because of personal difficulties.

(b) Repeatedly lost time (days or weeks).

(c) Occurrence of multiple or severe disciplinary episodes.

(d) Consistent, prominent difficulties in interpersonal relationships (such as frequent fights, isolation from others).

7. *Interference with school and work due to subjective distress.* Any one or a combination of:

(a) Much loss of time (days or weeks).

(b) Periods of gross impairment in usual ability to handle assigned tasks.

(c) Feeling of general incapacitation.

8. *Poor family adjustment.* Any one or a combination of the following:

(a) Ran away from home.

(b) Quarreled incessantly.

(c) Chronically refused to co-operate.

(d) Extremely dependent.

How well can patients in the immediate and late groups be discriminated? Table 3 gives the results of scoring each man on the basis of five of the most important items of his previous behavior. For example, a cutting score of 2, that is, having two or more of these types of previous failures, would involve 63 percent of the immediate group and only six percent of the late group. Or, a cutting score of 3 would include 38 percent of the immediate group and three percent of the late group. The goal would be to reject for enlistment the group with characteristics which would include a reasonable percentage of the immediate

group while including only an extremely small percentage of the late group. Much further research, however, is needed before criteria of this kind could be applied in practice.

TABLE 3. *Results of individual scoring on the basis of one or more characteristics**

Number of characteristics	Patients			
	Late group		Immediate group	
	Number	Percent	Number	Percent
5			5	5
4			12	18
3	2	3	19	38
2	2	6	24	63
1	13	26	23	86
0	49	100	13	100
Total	66		96	

*Previous similar illness of equal severity, hospitalization, school failure, work failure, and poor family adjustment.

ACCURACY OF FINDINGS

Because these figures were based on hospital clinical records, the information is neither complete nor entirely accurate. Though relevant information sometimes was not in the clinical record, the most pertinent items in this study are standard questions covered in almost every psychiatric interview or social history. These items involve relatively gross, obvious aspects of the individual's life, and therefore can hardly escape notice.

In those cases in which corrective cross-check of information from outside sources was not available the question arises as to whether or not the information in the clinical records was distorted by the patients. For example, the number of past major difficulties in the "immediate" group might be artificially increased by patients who take the attitude, "I've been so sick all my life that the Army never should have taken me in." On the other hand, the number of similar difficulties in this same group might be artificially decreased by the commonly encountered attitude, "The Army has ruined me; I never had so much trouble before." Another prominent question in this regard is whether or not the incidence of major preservice difficulty might be artificially decreased in the late breakdown group by conscious or

unconscious efforts to establish that the disability is service connected.

The number of items might be distorted by some basic differences in the orientation of the professional staff preparing the clinical records, based on a difference in the two groups: *i. e.*, men in the immediate group had given no effective service, whereas men in the late group were often looked on as real soldiers who had given effective service previously. These differences in orientation toward the two groups inevitably led to some difference in emphasis in the clinical records. The items most pertinent to this study, however, are likely to be included in the record regardless of the physician's training or the type of disposition. In order to check on some of these possible sources of distortion, the group of patients on whom Red Cross histories were available were tabulated separately on the key items. Although this double-check group was small from a statistical viewpoint, the percentage distribution of positive and negative findings was comparable to the distribution found in the total group. These figures are included in table 1.

Every effort was made to handle the data in the same way for both groups, and to apply the standards rigorously and equally. After the initial scoring, one extra "weeding-out" check was made on the immediate breakdown group to find any instance in which a questionable item had been scored as positive (that is, severe impairment or failure). All such items were changed to negative. The data reported give a roughly accurate quantitative estimate of the differences between the two groups on the items recorded. It is probable that, if complete information on every patient was available from all sources, the number of most relevant items would be somewhat higher in both groups, but that the differences between the two groups would remain about the same.

POSSIBLE PREDICTIVE VALUE IN SCREENING

In this study the items which seem most predictive of immediate breakdown are previous similar illness, psychiatric hospitalization, school and work failures, and severe disruption of recent family relationships. It is possible that civil disciplinary episodes and confinement might also be useful, but our study does not clarify this point because the records contained little information of this type. If a man in civilian life fails when given any substantial responsibility, and needs constant protection, there is a high probability that he will do likewise in the military service. Several follow-up studies on psychiatric screening seem to give some evidence in support of this proposition.[12, 14–24]

The question arises whether such criteria for screening ought to be based on psychiatric diagnosis or on functional impair-

ment, particularly because some studies give slight encouragement to the view that the former (when restricted to broad categories such as psychosis and overt neurosis) may be of predictive value for breakdown in service.[12,25] When carefully applied, it is very probable that psychiatric diagnosis coincides to a large extent with functional impairment. We believe, however, that functional impairment is generally preferable for this purpose for the following reasons:

1. This study provides little evidence of predictive value in diagnoses. Because this is a retrospective study, too much weight cannot be attached to this point. It is conceivable that preinduction diagnoses might give very different results.

2. The type of items we have used in dealing with functional impairment lend themselves to relatively simple definitions which can be readily understood and widely used. They tend to reduce complex judgments, differences of interpretation, and theoretic biases.

3. There is still considerable difference of opinion and usage among psychiatrists of diagnostic categories. These involve more complex judgments and abstractions which are relatively difficult to define. Furthermore, penetrating interviews may reveal symptoms (such as anxiety, depressive trends, and compulsive behavior) which might justify a psychiatric diagnosis in a large percentage of the total population, and it probably was such a process which led to the extraordinarily high diagnosis and rejection rates in World War II.

4. It is a common clinical observation that many persons with symptoms sufficient to justify a psychiatric diagnosis nevertheless perform effectively in society and sometimes make remarkable achievements. From the viewpoint of the needs of the military service, the essential consideration is not the presence or absence of symptoms justifying a diagnosis but whether or not the individual can function effectively in spite of his symptoms.

ADDITIONAL STUDIES NEEDED

These findings, considered in light of the trend of postwar evidence on psychiatric screening, emphasize the need for intensive study of this immediate breakdown group. The study presented should be repeated in various Army areas. The focus might be sharpened even further by considering only closed ward patients, because these represent the most severe and least rehabilitable patients. As an additional check, it would be useful to have information from parents, employers, family physician, and schools in all cases.

If several such retrospective studies were as indicative as ours, a predictive study might then be made in connection with the selective service procedures, so that information would routinely be obtained from a large number of inductees who would then be observed during basic training to determine those who broke down immediately and were discharged from service. In this way, effective criteria for prediction of immediate breakdown might be established; or else it might be determined systematically that even this extreme group could not be effectively and economically screened in light of present knowledge.

This study has not explored the potentially important problem of motivation for military service[26] and related psychodynamic factors, even at a conscious level. Hospital records contain little information that is helpful in evaluating the motivational factors at the time of entry into service. This is a major research problem in itself, but two points should be noted: (1) Motivation for military service is probably a complex matter, involving both conscious and unconscious attitudes, and in many cases is not accurately reflected by the patient's statement of desire or lack of desire to serve; and (2) it is probably not a static part of the personality, but rather a changing, developing orientation which is considerably influenced by one's assignment, personal relationships, leadership, group identification, and physical hardship.

Research on psychiatric screening at the Army Medical Service Graduate School, in collaboration with other installations, is directed toward establishing more accurate and useful criteria which might ultimately be used, first, to sharpen the focus of the screening interviews. These must be brief, and any information which steers the interviewer toward those areas that are most likely to be predictive of early breakdown seems worthwhile. Second, these criteria could be the basis for the development of a screening device, for use prior to interview, to select those men who are in the doubtful category and require more detailed interviewing. These studies also have a bearing on broader problems of adjustment. Screening is only one part of the total manpower problem. Effective use of men after they have entered military service is of primary importance.[27–29]

SUMMARY

In recent years, the goal of psychiatric screening for the armed services has been shifted from exclusion of potential psychiatric casualties to the elimination only of those who are psychiatrically incapacitated in civilian life. This study has attempted to provide evidence on the degree and nature of preservice functional impairment in a group of men who required psychiatric hospitalization within 30 days after entry into military service. Ninety-six such patients were compared with 66 others

who served uninterruptedly for a year or more prior to hospitalization. There was a much higher incidence of severe preservice functional impairment in the immediate breakdown group than in the late breakdown group. This impairment mainly involved previous illness, hospitalization, work record, school record, and adjustment to family. This suggests that the men who break down immediately after entering service provide a logical focus for psychiatric screening research, directed toward more accurate preservice prediction.

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Medical Statesmanship

There are new frontiers for medicine, particularly for American medicine, because our country has assumed the leadership of all free nations. These are the opportunities for medicine and physicians to become leaders in the field of medical statesmanship. Political statesmanship and armed might alone have not proved equal to the task. The physician, because of his prolonged and continued life of study, is trained to command. He seeks no political office and, because of that fact, his position for influence is greatly strengthened. The influence of physicians in public affairs has waned greatly in the past hundred years. There was a time when they were civic leaders as well as professional men. To that position they must return. But they cannot return if they remain within the confines of their medical duties, pursuing blindly and furiously their limited objectives. First of all they must fulfill their primary function of healing the sick, of course, but they must raise their sights. They must use their intellect and their energy ceaselessly to plan and to act in this great struggle to prevent the destruction of civilization as we know it today.

—I. RIDGEWAY TRIMBLE, M. D.
in *Journal of the American Medical Association,* p. 1145, Nov. 28, 1953

ARTHROTOMY OF THE KNEE JOINT

A Statistical Analysis of 260 Cases

VINCENT E. WAGNER, *Commander (MC) USN*

THIS article is a comparative study of the symptoms and operative findings in 260 consecutive arthrotomies performed by 35 different surgeons over a four-year period in a naval hospital. The patients in this study were selected from the military age group (table 1), and included 29 veterans.

TABLE 1. *Age distribution of patients studied*

Age of patients (years)	17-20	21-30	31-40	Over 41
Number of cases	82	139	26	13
Percent of total (260)	32	53	10	5

MacAusland,[1] reporting 388 cases among civilians, found the majority of patients in the 21- to 30-year age group (32 percent); the next largest number in the 11- to 20-year age group (23 percent); and the third largest in the 31- to 40-year age group

TABLE 2. *Types of injury sustained*

Type of injury	200 meniscectomies (percent)	60 other arthrotomies (percent)
Football	28.5	8
Twisting (other sports)	24.5	13
Direct blow	10.5	27
Fall	9.5	17
Rising from squat	9.5	0
Other	15.0	18
No history of injury	2.5	17

(17 percent). Sixty-five percent of his patients were males. Bonar,[2] reporting 200 meniscectomies among miners, found 53.5

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percent of the patients under the age of 35. The cases presented here comprise 200 meniscectomies and 60 other arthrotomies in which the meniscus was not removed. A history of injury was obtained in 97.5 percent of the first group and 83 percent of the second group (table 2).

Athletic injury was the cause of 53 percent of the meniscectomies, while a direct blow or fall accounted for 44 percent of the other arthrotomies. In this study meniscus tears were usually the result of an athletic injury, whereas other types of lesion generally followed a direct blow or fall. Duthie and MacLeod[3] found that 60 percent of their cases dated from a football injury. MacAusland reported that 80 percent of his patients gave a history of injury; 62 percent were miners, and the next largest group were athletes.

SYMPTOMS AND PHYSICAL FINDINGS

The symptoms and physical findings presented by the two groups studied here are given in table 3.

TABLE 3. *Symptoms and physical findings*

Symptoms or physical findings	200 meniscectomies (percent)	60 other arthrotomies (percent)
Pain in knee	85.0*	70**
Swelling	68.0	55
Locking	51.0	23
Atrophy of quadriceps	38.0	33
Extension limited	35.5	30
Flexion limited	30.0	28
McMurray positive	35.0	8
Effusion present	26.0	23
Clicking present	22.5	17
Giving way	19.5	23
Ligaments involved	19.5	27
Patellar grating	9.0	20
Stiffness	5.5	13
Roentgenograms positive	9.5	61
Palpable lump	9.5	0

*Localized in 70 percent. **Localized in 40 percent.

Pain was the most frequently recorded symptom. In the absence of fever, increased sedimentation rate, and systemic disease, pain was an indication of internal derangement. Its location was important. When the pain was at the joint line, either at the anterior edge of the medial collateral ligament or under the ligament, it usually indicated a tear in the medial meniscus; when at the attachment of the ligament, a tear of the ligament; and when caused by forcing a locked knee or by the McMurray maneuver, an injury of a meniscus.

The next most frequent and important finding was swelling. This nearly always accompanied the original injury. A history of recurrent swelling strengthened the supposition that internal derangement was present. Its absence was strong evidence against internal derangement. Some chronic cases reached a stage of locking without swelling, but had a history of swelling.

Locking, when present and not caused by joint mice, confirmed the diagnosis of meniscus injury, especially if all the other symptoms so far mentioned were found. It was important to inquire carefully into the condition in order to give it credence as true locking; *i. e.*, did it occur while rising from a squat, during some athletic twisting of the knee, or stepping down from a curb, and how was it relieved? Many patients learned how to release a locked knee by manipulating it themselves. Some could not relieve it and were admitted with a bent knee. In others locking was due to the trapping of a joint mouse. The occurrence of such locking did not affect the treatment, as patients with lesions of the meniscus and those with joint mice both required arthrotomy. All but two of our patients with a history of locking, for whom arthrotomy was performed without removal of a meniscus, had joint mice. It was important to rule out slipping of the biceps femoris tendon, crepitation of the patella, and "riding off" an otherwise normal cartilage (not painful and unaccompanied by swelling or a history of swelling).

Atrophy of the quadriceps femoris muscle varied from one half inch to two and one half inches and was objective evidence of limited function of the knee. Its absence ruled out arthrotomy, especially if other important symptoms were also lacking. Limited extension and flexion, when forced, often demonstrated characteristic springiness and pain, and favored the diagnosis of a meniscus lesion.

The McMurray maneuver, when positive, was characteristic of a meniscus lesion and helped to distinguish it from other internal derangements. It also helped to indicate the part of the cartilage torn. The lesion was posterior when the click occurred during acute flexion, and more anterior if it occurred as the knee was

extended. This sign strongly supported a diagnosis of meniscus lesion as it occurred four times more frequently here than in the arthrotomy group without meniscectomy.

The occurrence of effusion, clicking, and giving way was about equal in the two groups, but patellar grating was more frequent in the arthrotomy group without meniscectomy, as was laxity of the ligaments. Laxity of the anterior cruciate ligament was three times as frequent as that of other ligaments among the 19.5 percent of the 200 meniscectomies with ligament laxity. A persistent palpable lump at the lateral side of the joint was indicative of a cyst of the lateral meniscus. Joint mice, when palpated, were movable and disappeared within the joint. The roentgenograms were negative in 90.5 percent of the group with meniscectomies and positive in 61 percent of the other group.

PATHOLOGIC FINDINGS

The pathologic findings in the menisci removed are listed in table 4. The percentage of "bucket-handle" tears found (51.5 percent) was practically the same as that reported by Adamson.[4] The percentage of normal cartilages removed (7 percent) was identical with that reported by Smillie.[5] Of the meniscectomies, 84 percent were medial and 16 percent lateral, a finding comparable to those of Bonar and Adamson. Smillie, however, found a considerably higher percentage of lateral cartilage injuries (36 percent).

TABLE 4. *Pathologic findings in the menisci removed*

Pathologic findings	200 meniscectomies (percent)
Tears	
Bucket handle	51.5
Posterior horn	13.5
Anterior horn	8.5
Parrot beak	4.5
Transverse	1.0
Posterior segment	1.0
Discoid cartilage	0.5
Unclassified	6.5
Cyst (all of the lateral cartilage)	3.5
Peripheral detachment	2.5
Normal cartilages removed	7.0

There was one case in this series where a "bucket-handle" tear of a lateral cartilage was discovered after a normal medial meniscus had been removed, so that both cartilages were removed in one operation. In another case both menisci were removed at separate operations. It was more difficult to determine preoperatively that a lesion was of the lateral cartilage. Smillie stated that in the lateral meniscus lesions with symptoms referred to the medial side of the joint, the symptoms are less positive and the pain and tenderness elicited by manipulation is on the side of the lesion. Pathologic findings in the two groups, other than lesions of menisci, are given in table 5.

TABLE 5. *Pathologic findings other than lesions of menisci*

Pathologic findings	200 meniscectomies (percent)	60 other arthrotomies (percent)
Ligament tears		
Anterior cruciate	10.5	15.0
Medial collateral	3.5	6.7
Lateral collateral	0.0	1.7
Posterior cruciate	0.0	3.3
Loose bodies in joint	7.5	48.0
Osteochondritis	16.5	44.7
Patella alone	6.5	11.7
Patella and medial condyle	5.0	10.0
Medial condyle alone	5.0	23.0
Thickened synovia	4.5	23.0
Arthritis with panus formation	1.0	1.8
Villous synovitis	0.0	1.7

There was a higher percentage of ligament tears, joint mice, chondromalacia, and thickened synovia in the group without meniscectomy. Chondromalacia of the patella occurred in 21.7 percent of the group without meniscectomy and in 11.5 percent in the group with meniscectomy. Haldeman and Soto-Hall[6] reported chondromalacia of the patella in only 10 percent of 289 arthrotomies. There was little difference in the involvement of the right and left knees. In both groups, the right knee was involved in 52 percent and the left knee in 48 percent. The symptoms presented and the pathologic findings were usually consistent, with the result that the preoperative diagnosis was accurate in 93 percent of the cases, as proved by the pathologic condition found. A typical case of lesion of the meniscus had

a history of athletic injury to the knee, pain localized at the joint line, and immediate swelling or recurrent episodes of swelling and locking. It revealed atrophy of the quadriceps, limitation of flexion and extension, a positive McMurray sign, and negative roentgenographic findings. Other forms of internal derangement usually had a history of direct blow to the knee, pain, and swelling. They demonstrated atrophy of the quadriceps, limitation of flexion and extension, giving way, laxity of ligaments, patellar grating, stiffness, presence of loose bodies, and positive roentgenographic evidence of loose bodies and osteochondritis.

The percentage of active duty patients with meniscectomies who returned to duty was 89; with other arthrotomies, 77. This is roughly comparable to the results reported by Duthie and MacLeod, Bonar, and MacAusland.

DURATION OF CONVALESCENCE

The average length of convalescence in the hospital was 71 postoperative days for the patients with meniscectomies and 85 for those with other arthrotomies. Military personnel were retained in the hospital until fit for duty or given a medical discharge from the service. Veterans were allowed to convalesce at home (table 6).

TABLE 6. *Duration of convalescence*

Type of surgery	Number of cases	Average number of postoperative hospital days
Meniscectomies	200	71
Veterans	22	28
Returned to duty	158	69
Medically retired	20	137
Other arthrotomies	60	85
Veterans	7	31
Returned to duty	41	93
Medically retired	12	89

Table 7 presents a comparison of the duration of symptoms before operation with the number of postoperative hospital days for convalescence.

In the 158 patients with meniscectomies who were returned to duty, the duration of symptoms before operation had no appreciable effect on the number of postoperative hospital days.

TABLE 7. *Duration of symptoms before operation compared with the average number of postoperative hospital days for convalescence*

Duration of symptoms (months	178 meniscectomies*				53 other arthrotomies*			
	Number of cases	Returned to duty (postoperative days)	Number of cases	Medically retired (postoperative days)	Number of cases	Returned to duty (postoperative days)	Number of cases	Medically retired (postoperative days)
1	24	76	1	117	12	98	0	0
2	14	60	0	0	3	136	0	0
3 - 6	15	87	1	83	6	52	1	26
7 - 12	19	60	2	180	2	64	1	93
13 - 24	23	69	2	200	3	59	2	89
Over 24	63	66	14	135	15	109	8	97

*Veterans excluded because most of their convalescence was at home.

TABLE 8. *Average number of postoperative hospital days required by age groups*

Age group (years)	178 meniscectomies*				53 other arthrotomies*			
	Number of cases	Returned to duty (postoperative days)	Number of cases	Medically retired (postoperative days)	Number of cases	Returned to duty (postoperative days)	Number of cases	Medically retired (postoperative days)
17 - 20	52	63	7	133	19	80	4	79
21 - 30	87	73	9	153	21	100	7	93
31 - 40	12	63	3	113	1	180	0	0
41 - 50	7	67	1	83	0	0	1	100
All ages	158	69	20	137	41	93	12	89

*Veterans excluded because most of their convalescence was at home.

Bonar reported a similar finding. In this series, however, the prognosis was better when the symptoms were of short duration. Of those medically retired, 69 percent had had symptoms for over two years, whereas of those returned to duty, only 39 percent had had symptoms for over two years.

FACTORS AFFECTING LENGTH OF CONVALESCENT TIME

Table 8 shows the average number of postoperative hospital days required by age groups. Those under age 21 averaged fewer hospital postoperative days. Naylor[7] stated that the best results were obtained in early cases. Bonar found the young miner made a quicker recovery than the older one.

TABLE 9. *Average number of postoperative hospital days with respect to types of incision and operating time*

Type of incision	Average number of postoperative days	
	153 meniscectomies*	41 other arthrotomies*
Fisher	55	–
Short parapatellar	56	83
Hockey stick	57	98
Transverse (6 cases)	66	–
Utility	91	127
Duration of operation		
Less than 60 minutes	63	80
More than 60 minutes	85	100

*Exclusive of veterans and patients whose records were not available.

In the cases studied here, there were 22 patients with meniscectomies (including three veterans and three who had been medically retired), with two incisions on the same knee. Their average postoperative hospital stay was 83 days, as compared with the general average of 71 days. There were five patients with other arthrotomies (including two veterans and one medically retired) who had two incisions in the same knee. Their average postoperative hospital stay was 85 days, which is identical with the general average. Patients with meniscectomies who had had two incisions were slower to convalesce. There were nine patients with meniscectomies who had two operations on the

same knee (including two veterans and four medically retired). Their postoperative days averaged 97, as compared with the general average of 71. There were 11 patients with other arthrotomies (including two veterans and two medically retired) who had two operations on the same knee. Their average postoperative days were 120, as compared with the general average of 85. Patients who had two operations on the same knee were slower to convalesce from the second operation.

Table 9 indicates the average number of postoperative hospital days as compared with the type of incision made and the duration of the operation. The number of postoperative hospital days was increased when the utility incision was used and when the operating time exceeded one hour. In 32 cases with removal of the lateral meniscus, the average postoperative days were 87, which was greater than the general average of 71 days for the group with meniscectomies.

SUMMARY AND CONCLUSIONS

In 200 meniscectomies and 60 other arthrotomies tears of the semilunar cartilage in naval personnel occurred most frequently as a result of athletic injury and in the younger age group.

Typical findings for injury of the meniscus were pain localized at the joint line, immediate swelling or recurrent episodes of swelling, locking, atrophy of the quadriceps, limitation of flexion and extension, a positive McMurray sign, and negative roentgenographic findings.

Typical findings for other internal derangement without injury to the meniscus were a direct blow to the knee, pain and swelling, atrophy of the quadriceps, limitation of flexion and extension, giving way, laxity of ligaments, patellar grating, stiffness, presence of loose bodies, and positive roentgenographic evidence.

Of the patients having meniscectomies, 51.5 percent had "bucket-handle" tears. Normal cartilages removed constituted seven percent. Tears of the ligament were present in 14 percent of these patients and 26.7 percent of those having other arthrotomies. Chondromalacia was present in 16.5 percent of the patients with meniscectomies and 44.7 percent of those with other arthrotomies.

The postoperative hospital stay was 71 days for the group with meniscectomies and 85 days for the group with other arthrotomies. The postoperative days were increased in the following situations: two incisions on the same knee, two operations on the same knee performed on separate occasions, the utility incision, and when the operating time was over one hour. They were decreased in the youngest age group.

Eighty-nine percent of the active duty patients with meniscectomies and 77 percent of those with other arthrotomies returned to duty. The prognosis was better when the symptoms were of less than two years' duration.

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Cardiac Asthma

The word asthma was first used by Hippocrates to denote "hurried breathing," and for some time it was considered synonymous with shortness of breath. In 1819 Laennec, the discoverer of auscultation, originated the concept that asthma is distinct from shortness of breath and represents a definite entity characterized by paroxysmal dyspnea without demonstrable associated organic lesions. In 1832, however, Hope called attention to the fact that there are several varieties of asthma, of which organic disease of the heart constitutes one, and that in all instances bronchospasm exists. He recognized the difficulty of distinguishing the asthma produced by disease of the lungs from that due to heart ailments and coined the term cardiac asthma for the latter. Subsequently, cardiac asthma became known as a distinct clinical state. In 1897 Osler described this syndrome so clearly that to date all writers on the subject quote him verbatim.

—MAXWELL GELFAND, M. D.
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INCIDENCE OF INFECTIOUS HEPATITIS IN THE NAVY

Applicability of Mass Prophylaxis With Gamma Globulin

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RECENT reviews of the epidemiologic characteristics of infectious hepatitis in troops[1,2] support the view that outbreaks result from the introduction of susceptible young adults into an area where the virus is widely spread and conditions are favorable for natural transmission.[3]

It has also been reported[4] that gamma globulin in doses as small as 0.01 cc. per pound of body weight was effective in passive immunization against viral hepatitis in three institutional epidemics. The single injection of gamma globulin used gave protection to the inoculated groups for at least five to nine months in the three epidemics. The probability that passive protection was afforded for these long periods was considered remote. The more likely explanation was that the waning passive immunity afforded opportunity for unapparent or subclinical infections to develop among the inoculated groups, which resulted in active immunity superimposed on the passive immunity. Epidemiologic and experimental evidence that infection produces immunity has been demonstrated,[4] although a history of second attacks is said to be obtainable in two to five percent of cases.[5]

Because an effective prophylactic measure against infectious hepatitis is at hand,[5] it was decided to review in detail the incidence of the disease in the naval service during 1951, the latest year for which complete information is available. The purpose was to determine whether the total incidence of infectious hepatitis could have been reduced materially by means of a program of mass prophylaxis with gamma globulin limited to selected groups of naval personnel. The source of the statistical data presented is a tabulation of incidence of infectious hepatitis for the calendar year 1951 reported on the Individual Statistical Report of Patient (NavMed-F).

INCIDENCE AT AFFECTED ACTIVITIES

The total incidence of 2,214 cases represented 2,199 persons admitted as new patients during the year. As seen in table 1.

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incidence rates were far from uniform and there was no area or fleet where incidence was absent. The highest rates, as expected, were observed in the European-North African and Far Eastern areas. In the former area, forces in Italy and French Morocco were affected with greatest frequency. In the Far East, although the First Marine Division had an imposing total of cases in Korea, its incidence rate was slightly less than that for other Navy and Marine Corps personnel in the Far East, which includes Korea, Japan, and the Philippine Islands.

The continental United States and Central and North Pacific (Marshall Islands, Hawaiian Islands, and Alaska), had rates about half of that of the Navy as a whole. Rates in the continental United States varied from 0.6 per 1,000 average strength in the Thirteenth Naval District (Washington, Oregon, Montana, and Idaho) to 2.4 in the Twelfth Naval District (Northern California, Nevada, and Utah). Other naval districts with incidence rates higher than average were the first, third, and fifth (Atlantic States from Maine to North Carolina). The four districts with the higher rates include large port facilities, and it is possible that a part of their incidence might have been due to persons from overseas areas. It is known, however, that hepatitis, although incompletely reported, was occurring in small numbers of persons throughout the United States.[6] The possibility cannot be excluded, therefore, that in these districts, as in overseas areas, the naval incidence might have been due to the presence of the virus in the civilian community.

The annual incidence rates for ships of the Atlantic and Pacific Fleets varied only slightly from the average for the Navy.

Table 1 reveals that half the cases appeared at a total of 654 ships and stations, each of which had an annual incidence of but one to four cases. Had gamma globulin mass prophylaxis been administered to the personnel after the appearance of the fourth patient at a ship or station, it is theoretically possible that, in a program limited to 113 ships and stations, the total incidence could have been reduced 50 percent. Because, as shown in subsequent tables, the 113 activities include many of the largest activities in the Navy, adoption of such a preventive program would have been impracticable due to the tremendous quantity of this scarce and expensive material that would have been required.

In an attempt to identify common source epidemics of hepatitis due to contaminated food or water, the incidence at activities reporting 10 or more new cases was arranged in tables 2, 3, and 4. Table 2 shows that in the United States the outbreaks characteristically consisted of apparently sporadic cases scattered

TABLE 1. *Total incidence and incidence at activities affected, 1951*

Shore stations and ships	Total incidence		Incidence at activities affected							
	Cases	Rate per 1,000	Number of activities	Number of cases at each activity						Average number of cases
				1	2	3	4	5-9	10 or more	
Total	2,199*	2.4	748	425	135	75	19	63	31	2.9
Shore stations										
Continental United States	560	1.2	184	95	31	18	6	24	10	3.1
First Marine Division, Korea	297	9.9	1						1	
All other Far East Pacific	244	10.7	65	27	14	8	2	8	6	3.8
Central and North Pacific	16	1.0	15	14	1					1.1
North Atlantic	7	5.2	3	2				1		2.3
Caribbean Sea Frontier	20	3.9	12	8	2	1		1		1.7
Europe	41	14.9	17	6	6	2		3		2.4
Ships										
Atlantic	463	2.5	197	129	31	14	4	10	9	2.4
Pacific	508	2.8	245	139	47	32	6	16	5	2.1
Military Sea Transportation Service	15		9	5	3		1			-
Unknown ships	28									

*The total is 15 less than reported in the 87th Annual Report of the Surgeon General of the United States Navy, NavMed P-5027, for 1951.

TABLE 2. *Incidence at continental stations reporting 10 or more cases*

TABLE 2. *Incidence at continental stations reporting 10 or more cases*

Station	Annual incidence		Monthly incidence											
	Cases	Rate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Naval Air Station, San Diego, Calif.	10	0.8	1		1			2*		1			4	1
Naval Training Center, San Diego, Calif.	21	0.7				1	1	2	3		5*	4	2	3
Receiving Station, San Diego, Calif.	13	1.2		1	2		1		2	2*	1	1	2	1
Marine Corps Training Command, Oceanside, Calif.	20	1.0	1	4	2	2		1	2	2	4		2	
Receiving Station, San Francisco, Calif.	19	1.8		1	1	1	3	1	2	2*	3	1	2	2
Naval Air Station, Memphis, Tenn.	12	1.1	2			1	1	1**	3		1		2	1
Naval Training Center, Great Lakes, Ill.	21	0.8			1	2	3		2	5	3	3	1	1
Naval Training Center, Bainbridge, Md.	11***	0.6						1		6	2			2
Second Marine Division, Camp Lejeune, N. C.	22	0.9	1	1		1	4	4	2	5	2	1		2
Marine Corps Recruit Depot, Parris Island, S. C.	20	1.3	1	2	2	2	1	2	2	2	2	2	2	

*One patient was a steward. **One patient was a cook.

***Average strength computed from average strengths for July-December. Strength data begin with 3,769 in April and 9,022 in May.

TABLE 3. *Incidence on ships in Atlantic reporting 10 or more cases*

Ships	Total		Monthly incidence*											
	Cases	Rate per 1,000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cruiser	23	16.5	*	* 2	* 4	* 1	*	* 1	*	* 3	* 5	4		3
Cruiser	11	5.0	1	2	1	2	1	1			*	* 1	* 2	*
Cruiser	11	8.2	*	*	* 4	1	1	1	1	2		1		
Cruiser	17	11.0	*	* 5	* 9	*					2		1	
Aircraft carrier**	15	6.8	*3	1		1	1				* 1	* 2	* 4	* 2
Aircraft carrier	15	7.0			2	1	*	* 3	*	* 1	* 5	1	2	
Aircraft carrier	19	5.9	* 1	* 2	*3	* 1	*3			1	*	* 1	* 3	* 4
Aircraft carrier	23	7.8	* 2	1		* 1	*	*	* 6	* 7	* 4	1	1	
Amphibious flagship	17	26.0							1	* 1	* 2	* 1	* 6	* 6

*During months indicated by *, the ship was in the Mediterranean.
**September patient was a steward; one patient reported in November was a cook.

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TABLE 4. *Monthly incidence at overseas stations reporting 10 or more cases*

Station	Total	Monthly incidence											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
A naval station, Philippine Islands	14		1	1	1	1	2		2	1	3		2
A naval operating base, Japan	32	3	1	3	4	2		2	3	5	3	3	3
A naval administrative command, Japan	10	1	1	1	2	1				2	1		1
A naval air station, Japan	15							3	4	2	3	2	1
First Marine Division, Korea	297	20	22	18	25	27	21	24	28	55	26	18	13
Marine Corps combined service group, Korea	17	1	1	2	1	3	2	2	1	1	1	1	1
Marine Corps force troops, Korea	12		1			3	2		1	2	1	1	1

throughout all months of the year. The combined incidence was highest during July, August, and September, in keeping with the seasonal increase during the period of May through November for all continental stations.

INCIDENCE IN ATLANTIC FLEET

Table 3 indicates that outbreaks of 10 or more cases in the Atlantic Fleet were restricted to large vessels. There are repeated instances of incidence groupings suggesting the possibility of common source epidemics, though small in extent. The fact, however, that 79 percent of the patients were detected during the period each of these ships was in the Mediterranean area or within a month of leaving that area, and that the specific annual rates were similar to those of shore stations in the European area, emphasizes again the greater likelihood that the disease resulted from the introduction of susceptible individuals into an endemic area. That illness among food handlers was detected on only one of these ships tends to minimize their role in the cause of the outbreaks. Sixteen cruisers and aircraft carriers were on Mediterranean cruises during 1951. The administration of gamma globulin to their crews prior to entering that sea might have prevented 135 of a total of 184 cases, but at least 4,000 units would have been needed, at an estimated cost of over $41,000, and nothing would have been accomplished toward reducing the remaining incidence in the Atlantic Fleet, of 279 cases.

In the Pacific Fleet only four ships reported an incidence of 10 or more, their average being 10.7 new cases. Sixty-five percent of the patients were admitted while the ships were cruising in Far East waters or during the month following. Only one cook was listed as a patient from the four ships.

No incidence rate was computed for ships in the Military Sea Transportation Service, because it was not possible to relate the few cases that appeared aboard ship to any specific population. Many voyages are of shorter duration than the incubation period of the disease, and admissions occurring during such voyages would not reflect the entire incidence of disease among the passengers.

INCIDENCE AT OVERSEAS STATIONS

Table 4 also reveals the scattered nature of outbreaks in overseas stations where 10 or more patients were admitted. None of the patients was a cook or steward. The effect of season, where noted, is consistent with that observed for Japan-Korea stations as a whole, the period April through November reflecting higher incidence than the remainder of the year.

Although naval stations in the European-North African area experienced a high rate as a group, apparently none was of suffi-

cient size to support an outbreak of 10 or more cases. Ten patients were admitted from two activities in Naples, Italy, during November and December. From eight activities in Port Lyautey, French Morocco, 18 patients were admitted during the year with greatest frequency in November and December.

From these reports, it is inferred that a gamma globulin prophylaxis policy for all personnel ordered to areas of high endemicity would be impracticable because of the large numbers of personnel involved and the scarcity and expense of the immunizing material.

INCIDENCE IN SELECTED CATEGORIES

In table 5, the higher rates for Medical Department personnel are not unexpected, considering their occupational exposure to patients. The rates for firemen, cooks, and marines are higher than for all other enlisted men except medical and dental corpsmen. The high rate for U. S. Marine Corps enlisted men may be due to the high incidence for Marine Corps activities in Korea. The rates for firemen and cooks have no ready explanation, but in the presence of a high rate among cooks, it is somewhat surprising that no epidemic of food-borne type was recognized. Cooks and stewards were affected in only 79 of 678 outbreaks at naval activities.

TABLE 5. *Incidence according to selected categories of personnel*

Category	Incidence	Rate per 1,000	Category	Incidence	Rate per 1,000
*Officers**	131	1.6	*Enlisted*	2,068	2.5
Medical Corps	14	3.2	Medical and Dental	116	3.9
Dental Corps	4	2.4	Firemen	144	3.1
Nurse Corps	8	2.5	Cooks**	51	3.4
			Marine Corps, men	539	3.1

*Marine Corps officers experienced a rate of 1.4/1,000 average strength.
**Stewards experienced a rate of 2.2/1,000 average strength.

Rates for Negroes and for all other personnel were identical; 2.4 per 1,000 average strength.

INCIDENCE BY LENGTH OF SERVICE AND AGE

Tables 6 and 7 present the incidence according to length of service and age. If the 1951 experience is typical, it would appear that large numbers of naval personnel may be still susceptible to infection with hepatitis virus after several years of naval

service. The scope of this study did not include a determination of whether or not the 1951 illness was the only admission for jaundice during the individual's naval service, and therefore

TABLE 6. *Incidence rate per 1,000 average strength according to length of service*

Length of service	Rate per 1,000
0 to 2 months	0.6
3 to 5 months	0.9
6 to 11 months	1.8
12 to 23 months	2.4
2 to 7 years	3.5
8 to 19 years	1.8
20 years or more	0.8

throws no light on the question of repeated attacks of hepatitis. Although the incidence rates for older persons and for those with many years of service were relatively low, it is evi-

TABLE 7. *Incidence rate per 1,000 average strength according to age*

Age (years)	Cases	Rate per 1,000
Under 20	213	1.4
20 to 24	1,219	2.9
25 to 29	474	2.8
30 to 34	189	2.0
35 to 39	61	1.4
40 and over	43	1.4

dent that large numbers of young men were still susceptible to hepatitis after two to seven years of service. The lower rates for personnel with more than seven years of service suggest that protection against the disease may have been acquired by virtue of duty assignments or change in habits, or because of an increase in resistance to infection.

SUMMARY AND CONCLUSIONS

The data presented from statistical records of patients admitted for infectious hepatitis in 1951 support the findings of others that the disease usually appears among young persons introduced into an area where the virus is widespread and where certain of the

conditions for natural transmission are fulfilled. No definite evidence of sharply circumscribed epidemics due to a common source was uncovered.

Although incidence rates for older persons with many years of service were relatively low, it is evident that large numbers of young men were still susceptible to hepatitis after two to seven years of service. Incidence rates for Medical Department personnel, due to their exposure to patients, were about twice as high as the average. Marine Corps enlisted personnel had a higher rate than average, related, in a large part, to duty in Korea.

The high rates for firemen and cooks are not readily explained. The importance of the latter group as potential sources of outbreaks was emphasized, but no evidence was found that they had in fact acted as such sources during 1951. Further information is needed to explain the higher incidence rates noted among enlisted cooks and firemen.

After analyzing the data according to geographic location (ashore or afloat), category of personnel, season of the year, and length of service, no basis for selection of personnel for mass prophylaxis with gamma globulin could be suggested that would have materially reduced the total incidence of hepatitis without requiring large amounts of that scarce and expensive material. Should the experience of 1951 prove to be typical, it is suggested that gamma globulin might well be reserved for mass prophylaxis for (1) forces entering a highly endemic area on a mission of great tactical importance, (2) the passive immunization of intimate contacts such as family groups, (3) persons caring for hepatitis patients under conditions where communicable disease technics cannot be employed, and (4) the control of local epidemics of unusual extent.

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PERSISTENT POSTOPERATIVE COMMON DUCT STONES AND THEIR NONOPERATIVE MANAGEMENT

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THE necessity for secondary operations on the common bile duct for removal of retained stones missed at operation or washed down from the liver is lessening because three nonsurgical technics are being combined to treat the complication successfully.

Common duct calculi are frequently encountered at the operating table. Clute and Swinton[1] of Lahey Clinic state that of the 35 to 40 percent of common ducts explored during gallbladder operations, 17 to 21 percent contained stones. Common duct calculi are also frequently retained after common duct exploration. Thus, Hicken and McAllister[2] report 110 instances, comprising the experiences of 26 surgeons at 11 hospitals in the Salt Lake City area, in which the operator had failed to remove all of the offending calculi at the primary biliary operation. Pribram[3] estimated that 16 to 25 percent of patients operated on for choledocholithiasis later showed common duct calculi.

Cholangiograms, done from the fifth to the eighteenth postoperative day after common duct exploration on 50 patients observed by Corff and associates,[4] indicated residual common duct stones in nine cases (18 percent). Only three of the nine patients required reoperation within one year, the remaining six patients being satisfactorily handled by nonoperative means. Of 46 patients in the series of Hughes and associates,[5] 24 percent had retained common duct stones on cholangiography and all underwent further surgical intervention. Other investigators list frequency of persistent common duct calculi as: two percent by McKittrick and Wilson;[6] 12 percent by Hicken and associates;[7] and 15 percent by Thiessen.[8] It is postulated by many investigators that retained common duct calculi following surgery are due not only to incomplete surgical exploration, but that liver

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calculi may, and on many occasions do, descend and lodge in the common duct. Hughes and his associates declared that postoperative cholangiography was 93.3 percent accurate in demonstrating the common duct stones not found at previous surgical explorations of the duct.

The various nonoperative methods designed to clear the biliary tree of retained stones have been thoroughly described by Strickler and associates.[9] Three technics are outstanding and have been combined by him to rid the common duct of persistent stones with dependable regularity, namely: Pribram's ether routine; Best's three-day program; and paralysis of the sphincter of Oddi with topical anesthetic agents.

ETHER ROUTINE

The ether flush of Pribram[3,10,11] was developed because cholesterin stones dissolve rapidly in ether. In surveying 51 consecutive cases, Pribram[3] found no failures of the ether method, and in no case was secondary operation necessary. He favored a double-barreled catheter with two side holes as recommended by Raffl, rather than the T-tube. Technic: Daily instillation of 0.5 to 3 cc. of ether into a T-tube or common duct catheter, after aspiration of bile, is performed in the morning or after fasting. Discomfort is generally avoided with drop by drop introduction, aspiration when the patient complains of pain, and repetition of the instillation of ether several times. Finally, 5 to 10 cc. of warm liquid paraffin or olive oil is injected and the T-tube clamped for several hours, but reopened if the patient feels increasing pressure. After two or three weeks the patient may leave the hospital, to be treated as an outpatient or at home, if necessary. The time required for the dissolution of residual common duct calculi varies from one to eight weeks.

Walters and Wesson[12,13] modified Pribram's technic by using 5 cc. of a two-to-one mixture of ether and alcohol to fragment choledochal stones, thus slowing vaporization of ether and the resultant rapid increase in intraductal pressure. Raffl[14] points out that 1 cc. of ether evaporates to form 222.1 cc. of vapor, at room temperature of 38° C. and atmospheric pressure of 760 mm. Hg.

Successful use of ether, alone or assisted by other measures, has also been reported by Amsterdam and Sterling,[15] Burgess,[16] Corff and associates, Gertz,[17] Michel,[18] Morton,[19] O'Shea,[20] Raffl, Welborn,[21] Boyce,[22] and others. Dissatisfaction and failures have been mentioned by Behrend,[23] Best,[24] Gertz, Goldman and associates,[25] Probstein and Eckert,[26] and Shepard.[27] Solution "G" as suggested by Goldman and associates has not proved as effective as ether.

THREE-DAY PROGRAM

Best's[24,28,29] three-day "biliary flush" is a useful program designed to purge the bile duct of debris by physiologic means. Success is claimed in approximately 25 percent of the cases where common duct stones are present after choledochotomy. Byrne[30] reported a patient in whom Best's flush was therapeutically effective; three common duct stones remaining after cholecystectomy and choledochotomy were cleared into the duodenum and recovered from the stool. The method is contraindicated where complete common duct obstruction exists because increasing back pressure may damage the liver. The program is advocated before any biliary tract operation to wash existing liver stones down into the common duct where they will be accessible at the first operation. Evidence is cited that liver stones are present in about seven percent of all cases of cholelithiasis; this is a likely source of a certain number of remaining or recurrent common duct stones. Best also institutes his regimen two weeks after every cholecystectomy to flush the biliary system.

Best's three-day program:[27] on the first and third days, 0.6 mg. of glyceryl trinitrate is given sublingually three times a day, and on the second day, 0.6 mg. of atropine sulfate is given orally or by hypodermic three times a day. Each morning 8 grams, or more, of magnesium sulfate in warm water and each evening 1 ounce of olive oil or thick cream are given orally. Three or four tablets of dehydrocholic acid (decholin or procholon) are given by mouth four times a day to increase secretion of bile. Each day gentle irrigation is performed through the T-tube with warm normal saline solution, and, after the T-tube has been drained by gravity or aspiration of saline, from 10 to 30 cc. of warm sterile olive oil or iodobrassid (lipoiodine) is instilled into the common duct. If the patient does not complain of distress during this course of treatment, the T-tube should be clamped off except for a 30- to 60-minute period after each instillation of oil. This three-day routine may be repeated after a few days, and can be repeated as many as 10 times in two months. Because it may prove debilitating, care should be taken not to exhaust the patient.

ANESTHETIZATION OF SPHINCTER OF ODDI

In regard to the injection of a topical anesthetic into the T-tube to relax the sphincter of Oddi, Pribram[11] mentioned the use of 0.5 percent procaine hydrochloride to paralyze the sphincter, permitting passage of common duct stones. Harris and Marcus[31] listed dibucaine hydrochloride (nupercaine) as a nontoxic spasmolytic agent, and presented one case illustrating its value as follows: postoperative cholangiograms on the thirteenth and nineteenth days revealed absolute block at the sphincter of Oddi. On the

twentieth postoperative day, 10 cc. of 1:500 solution of dibucaine hydrochloride was instilled into the T-tube. The tube was clamped for 10 minutes, then gently irrigated with 50 cc. sterile warm saline solution. A cholangiogram a few hours later indicated no common duct obstruction remaining.

Harris and Marcus also recommended that dibucaine hydrochloride be used by surgeons during operative explorations of the

Figure 1. Cholangiogram 12 days after common duct exploration, demonstrating at least two retained stones.

common bile duct to allow easy, nontraumatic dilatation of the sphincter of Oddi. Glenn and Hill[32] and Amsterdam and Sterling[15] described use of topical anesthetic agents, including 1 and 1.5 percent piperocaine hydrochloride (metycaine), of which 10 or 20 cc. injected into T-tube relieved obstruction of the common duct by retained stones.

This principle has been verified by Thistlethwaite[33] who cannulated the common duct of dogs, prepared after the method of

Dragstedt and associates[34] with a pouch of duodenum into which only the pancreatic ducts entered, following a 75 percent gastric resection. He connected the cannula to a saline manometer and found that the resistance of the sphincter of Oddi was not altered by vagotomy or methantheline bromide (banthine) therapy. Bi-

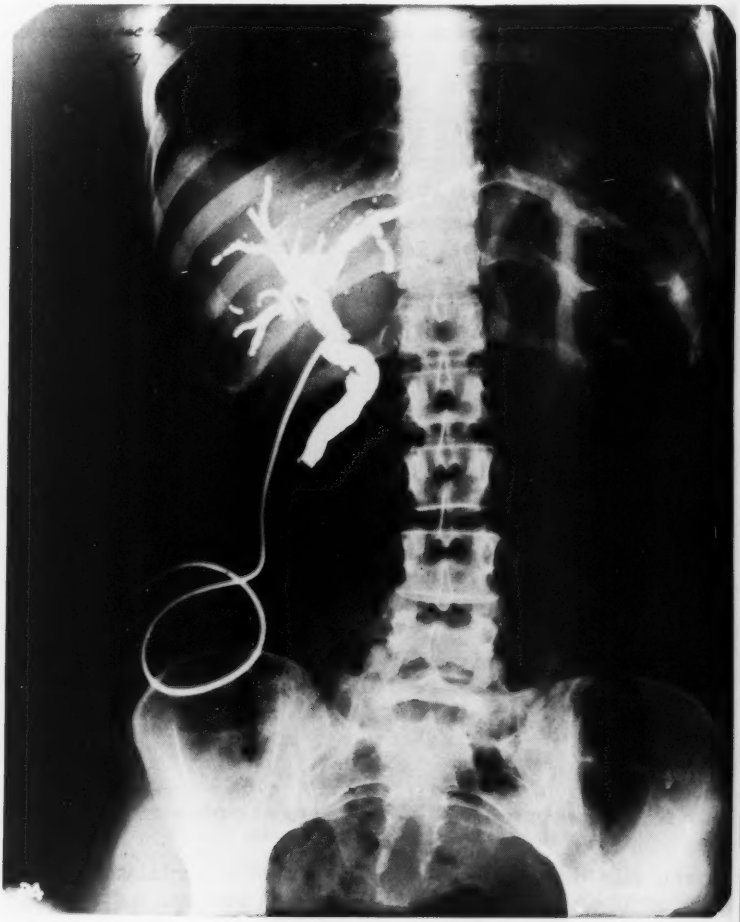

Figure 2. Cholangiogram on eighteenth postoperative day. Calculi continue to obstruct the common duct.

lateral transthoracic interruption of the sympathetic chains or sympathetic block with procaine hydrochloride decreased sphincter resistance somewhat. However, the sphincter of Oddi was paralyzed when two percent procaine hydrochloride (novocain) was applied directly to the sphincter by injection into the cannula.

CASE REPORT

A slightly built, 24-year-old married woman, the mother of one 14-month-old child, was admitted on 20 July 1951 with a history of several biliary attacks during the previous week. A roentgenogram of the abdomen showed many opaque gallbladder stones.

Figure 3. Final cholangiogram on thirtieth postoperative day, 10 days after conservative therapy with procaine hydrochloride and saline solution. No calculi are present.

Several days later the patient experienced violent epigastric pain, nausea and vomiting, and moderate jaundice. Her icteric index was 19; van den Bergh's reaction was 4.6 and 5.7 mg. per-

cent, direct and indirect; and serum amylase was normal. Cholecystectomy and choledochotomy were performed by one of us (R. A. McC.) on 2 August 1951.

There were at least 50 calculi in the gallbladder; the common duct was dilated but contained only gravel. After the common duct was well irrigated with saline solution, a T-tube was inserted. The jaundice cleared up several days later. A cholangiogram through the T-tube on the twelfth postoperative day, 14 August 1951 (fig. 1), showed at least two and possibly three residual common duct calculi, with partial obstruction and moderate dilatation of the duct. A repeated cholangiogram on the eighteenth postoperative day, 20 August 1951 (fig. 2), demonstrated one stone at the ampulla, and probably one proximal to that. On 21 August and 22 August 1951, 10 cc. of 2 percent procaine hydrochloride was injected into the common duct through the T-tube, and after 10 minutes of stasis 150 cc. of sterile normal saline solution was dripped into the T-tube from a flask suspended at a height of two feet above the anterior abdominal wall, this level determined by the degree of the patient's discomfort. These irrigations thereafter were abandoned due to slight fever, chills, and the leakage of saline solution from the stab wound around the T-tube. The van den Bergh reaction and albumin-globulin ratio were back to normal on 27 August 1951. A cholangiogram on the thirtieth postoperative day, 1 September 1951 (fig. 3), revealed a nondilated common duct free of obstructive calculi. The T-tube was kept clamped for three days, then removed. Discharged on 1 September 1951, the patient was followed for six months, during which period she showed no recurrence of biliary tract symptoms.

SUMMARY

The 15 percent average incidence of choledochal stones persisting after exploration of the common bile duct for calculi presents the surgeon with a problem in management. Three nonsurgical technics are recommended to treat the complications successfully, making secondary operations on the common bile duct less necessary: (1) Pribram's ether method; (2) Best's three-day biliary flush; and (3) paralysis of sphincter of Oddi by direct application of a topical anesthetic agent. In a case report exemplifying the use of 2 percent procaine hydrochloride to anesthetize the sphincter, sterile saline solution under pressure washed the retained common duct stones into the duodenum. The literature contains many other case reports establishing the worth of these three nonoperative means of eradicating calculi remaining after common duct exploration for choledocholithiasis.

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The Physician and the Patient's Welfare

In the days of the "horse and buggy doctor" there was an intimate physician-patient relationship. The family doctor was a friend of everyone in the community; he was admired, loved, and respected. He would spend hours on the road, only to find that his patient was a hysterical, lovesick girl whose boy-friend had married someone else. Instead of berating her for her foolishness, he would convince her how fortunate she was not to have married such a fellow—and then make no charge because he gave her no medical treatment. The physician of our grandfather's time saw more hopeless cases than we do, for he had no means by which many seriously ill patients could be saved. But he gave them hope of a future life, where the sorrows and tragedies of this world would be forever forgotten; he comforted members of the family who were left, and gave them the hope of seeing their loved ones in a better land.

There is much discussion today about preserving the personal physician-patient relationship. The regimentation of physicians and of patients into an organization for providing medical care tends to disrupt the personal contact and to inhibit the trust which every patient should have in his physician. Even in these circumstances, however, there can and should be a personal responsibility assumed by each physician for the welfare of his patient. When a physician recognizes and accepts this responsibility, he will instill into his patients that confidence which is so essential to successful treatment.

—ROGER W. BARNES, M. D.
in *California Medicine*,
p. 192, Mar. 1954

"UNIDENTIFIED" GRAM-NEGATIVE RODS AND THE TRIBE MIMEAE

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GRAM-negative micro-organisms whose biologic characteristics do not strictly conform to those of well-recognized bacteriologic groups are sometimes isolated from pathologic processes. Their classification has been an annoying problem to the bacteriologist and their significance in the patient's illness has been confusing to the clinician. One group of gram-negative bacilli has been characterized in some detail and assigned to the tribe *Mimeae* as provisional systematic classification. Because military bacteriologists may be unfamiliar with them, the following summary has been prepared to outline briefly the isolation, identification, and classification of this group of bacteria and to call attention to their possible clinical significance.

In 1939 De Bord[1] described certain micro-organisms whose presence often complicated the diagnosis of gonorrheal infection by the smear method. Among these were a group of gram-negative rods which he suggested be grouped together in a provisional tribe called *"Mimeae,"* so named because of its ability to mimic many other gram-negative bacteria. The *Mimeae* are gram-negative to gram-variable, nonsporulating, pleomorphic, encapsulated, motile or nonmotile rods, often showing modified bipolar staining, retaining partial gram-positiveness, which may or may not react with dimethyl-p-phenylenediamine. They grow well on meat extract media producing smooth, white, convex colonies. Diplococcal forms predominate on solid media, and rods along with filaments are abundant in liquid culture. These gram-negative rods closely resemble and may be mistaken for *Neisseria* and *Pasteurella* species.

De Bord[2] in 1942 elaborated on his previously published note, and on the basis of biochemical activity suggested the establishment of three genera, each with a single species, in the tribe *Mimeae*. The first genus, *Mima,* to which the species *polymorpha* has been assigned, is characterized essentially by its inability

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to attack carbohydrates. A detailed description of this organism is appended:

Morphology. Pleomorphic, nonencapsulated, nonsporulating, nonmotile gram-negative rod, 0.5 to 0.7 by 1.0 to 3.0 microns. The diplococci predominate on solid medium and rods and filaments in liquid medium. Many diplococci resemble *Neisseria gonorrhoeae*. They display modified bipolar staining and may show both gram-positive and gram-negative characteristics.

Colony. Luxuriant growth on meat extract and chocolate agar with white, glistening, smooth, moist, and viscid colonies.

Oxidase reaction. Negative.

Broth. Growth diffuse with viscid sediment.

Carbohydrates. Glucose, maltose, sucrose, mannitol, dulcitol, salicin, and dextrin not fermented.

Methyl red. Negative.

Voges-Proskauer reaction. Negative.

Citrate. Negative.

Indol. Negative.

Nitrates. Not reduced.

Catalase. Positive.

Sources. Vagina, urine, spinal fluid, blood, and pus.

A variant of this species, designated *Mima polymorpha* var. *oxidans,* differs from the above-described species only in its oxidase reaction which is positive.

The second genus of the tribe *Mimeae* has been named *Herellea* after D'Herelle, and contains one species designated *vaginicola.* It is distinguished from other members of the tribe by its ability to produce acid from glucose, galactose, xylose, and arabinose with remarkable homogeneity.[3] Citrate is used as a source of carbon. Other than these two differentiating characteristics, it is morphologically, culturally, and biochemically similar to *Mima polymorpha.* This organism has been isolated from the normal vagina, feces, urine, blood, sputum, spinal fluid, and eye secretions in conjunctivitis.

A third genus, *Colloides,* is composed of a species capable of fermenting certain carbohydrates with the production of acid and gas. The single species of the genus is named *anoxydana.* The following characteristics differentiate it from the *Mima* and *Herellea* species:

Oxidase reaction. Negative.

Carbohydrates. Acid and gas from glucose, maltose, lactose, mannitol, and dulcitol. Does not ferment sucrose, salicin, and dextrin.

Indol. Positive.

Methyl red. Positive.

Voges-Proskauer. Negative.

Citrate. Positive.

Nitrates. Reduced.

Catalase. Positive.

Sources. Normal vagina, vaginitis, conjunctivitis, and war wounds.

Additional strains were added to the tribe by Deacon[4] who described 19 cultures isolated from patients with meningitis following head injury, therapy-resistant gonorrhea, and war wounds. These organisms consisted of eight identified as *Mima* species, 10 as *Herellea* species, and one as *Colloides* species. Schaub and Hauber[5] encountered similar organisms from human sources, and because of their failure to reduce nitrates to nitrites named them *Bacterium anitratum.*

After several years of study on a large number of similar gram-negative bacilli, Stuart and associates,[6] apparently unaware of Deacon's work, concluded that these were a transitional group of previously undescribed members of the *Enterobacteriaceae,* antigenically heterogenous and varying markedly in pathogenicity. Stuart called the prototype of these B5W. Similar gram-negative rods had been isolated from pathologic material by Ferguson and Roberts[7] who studied and compared the organisms known as *B. anitratum* and B5W. They employed a total of 109 cultures: 22 from Stuart, two from Schaub and Hauber, and 85 from their own stock. It was found that all were related morphologically, biochemically, and antigenically.

In 1949 this confusing situation was somewhat clarified when Ewing[8] called attention to the similarity between *B. anitratum,* organism B5W, and members of De Bord's tribe *Mimeae.* He had observed these micro-organisms in the spinal fluid of patients with acute meningitis in Italy, and as early as 1942 had isolated them from sulfonamide-resistant gonococcal infections. After comparing the cultures described by Schaub and associates, Ferguson and Roberts, and Deacon, he concluded that they were not members of the *Enterobacteriaceae,* but should rather be considered as members of the tribe *Mimeae.* The tribe is now assigned to the family *Parvobacteriaceae.*[9]

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TABLE 1. *Antibiotic sensitivity of certain members of the tribe* Mimeae

Antibiotic	Genus *Mima**		Genus *Herellea**			
	Strain 358	Strain 495	Strain 499	Strain 500	Strain 667	Strain 994
Aureomycin	Sensitive	Sensitive	Moderately sensitive	Moderately sensitive	Moderately sensitive	Moderately sensitive
Bacitracin	Sensitive	Sensitive	Resistant	Resistant	Resistant	Resistant
Chloramphenicol	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant
Dihydrostreptomycin	Sensitive	Sensitive	Resistant	Resistant	Resistant	Resistant
Erythromycin	Moderately sensitive	Sensitive	Resistant	Resistant	Resistant	Resistant
Neomycin	Sensitive	Sensitive	Moderately sensitive	Moderately sensitive	Sensitive	Moderately sensitive
Penicillin	Moderately sensitive	Moderately sensitive	Resistant	Resistant	Resistant	Resistant
Polymyxin	Sensitive	Moderately sensitive	Relatively resistant	Relatively resistant	Relatively resistant	Relatively resistant
Streptomycin	Sensitive	Sensitive	Relatively resistant	Relatively resistant	Relatively resistant	Relatively resistant
Oxytetracycline	Sensitive	Sensitive	Moderately sensitive	Relatively resistant	Relatively resistant	Relatively resistant

*Strain Nos. 358 and 495 were isolated from spinal fluid, Nos. 499 and 500 were of unknown origin, and Nos. 667 and 994 were isolated from urine.

The *Mimeae* usually occur in the encapsulated phase, and possess both somatic and capsular antigens. No significant serologic relationship between these organisms and other well-recognized, gram-negative bacilli has been reported. However, cultures identified as *Herellea* species may be agglutinated by antisera prepared from the organism Schaub and Hauber described as *B. anitratum*. The occurrence of nonencapsulated, smooth, and rough variants complicates the serologic reaction of these organisms. The nature of the somatic antigen is still under investigation although Ferguson and Roberts have demonstrated 10 distinct capsular types.

Because the literature contains scant information of antibiotic sensitivities in this group,[10] a survey was made of the antibiotic sensitivity of six cultures of *Mimeae* isolated within the last 8 months. Two of these strains (Nos. 358 and 495) were isolated from spinal fluid, two (Nos. 667 and 994) from urine, and two (Nos. 499 and 500) are of unknown origin. Using sensitivity disks these tests were performed according to the rapid method suggested by Fusillo[11] and results are based on inhibitory zones produced. The results shown in table 1 indicate that the two strains of *M. polymorpha* were sensitive to all antibiotics except chloramphenicol while the four strains of the *Herellea* species, in most instances, were resistant to all except aureomycin and neomycin.

Members of the tribe *Mimeae* have been isolated in most parts of the world and have been found in a variety of human tissues. They are consistently pathogenic for mice and guinea pigs when inoculated intraperitoneally, but exhibit varying degrees of pathogenicity for rabbits. Species have been isolated in pure culture from patients with meningitis,[12] bacterial endocarditis,[13,14] septicemia,[15] vaginitis,[16] and a variety of other pyogenic infections. Their presence should be suspected when small gram-negative rods in diplococcal forms are encountered in material from human sources.

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Abuse of Radiation Therapy

Many surgeons, uncertain whether or not their surgery of cutaneous lesions has been adequate, will advise postoperative x-ray therapy in addition. Postradiation complications frequently occur as a result of treatment by conscientious physicians who have not been trained properly in the administration or who are not aware of the hazards involved. Severe damage may arise following treatment of a person who is unusually susceptible or from the effect of an x-ray machine that has not been properly calibrated. Patients may receive radiation therapy from several individual physicians, without each succeeding therapist bothering to learn how many roentgen units have been given before. Since only a maximum total can be tolerated over a given area irrespective of the time lapse between treatments, the net total under these circumstances is frequently sufficient to produce injury. I have been deeply impressed by the observation of several patients who have received radiation therapy over 50 years previously, only to have breakdown and carcinomatous degeneration occur after this long interval.

—PAUL W. GREELEY
in *Surgery Gynecology and Obstetrics,*
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Mima Polymorpha as a Causative Agent in Waterhouse-Friderichsen Syndrome

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MIMA polymorpha, first described by De Bord[1] in 1939, was reported later by him as the causative agent in a nonfatal case of meningitis.[2] Pike and associates[3] isolated the species from a patient with subacute bacterial endocarditis. It has been found in purulent conjunctivitis and in normal vaginas,[4,5] and isolated from war wounds, the spinal fluid following head injury, and from the genitourinary tract.[6] Faust and Hood[7] reported a fatal case of septicemia, caused by *M. polymorpha*, which was suggestive of Waterhouse-Friderichsen syndrome. Schuldborg[8] reported a fatal case simulating meningitis in an infant in which *M. polymorpha* was the apparent causative agent. In this report of two related cases of infection with this species, one patient presented a classical picture of Waterhouse-Friderichsen syndrome which terminated fatally.

CASE REPORTS

Case 1. A 19-year-old white airman reported to sick call and was seen by a physician at about 0600 hours on 7 January 1953.

The patient presented symptoms of a mild, upper respiratory infection with a temperature of 100.6° F., sore throat, nausea, muscular aches, backache, chills, and sleeplessness. On physical examination the throat was injected but the lungs and skin were clear.

He was given 600,000 units of penicillin intramuscularly, and aspirin, phenacetin, and caffein tablets were prescribed. He was excused from duty for 48 hours and instructed to return if his condition did not improve. After returning to his barracks he complained of a headache but did not report to the dispensary until 1115 hours, when he had become acutely ill. He was seen by another physician who advised immediate hospitalization. At that time he was semicomatose, had a temperature of 101° F., petechiae were present over the entire body, and the nail beds

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were cyanotic. The impression then was that he had severe septicemia. He was dead on arrival at the hospital at 1125 hours.

Autopsy findings. Over the entire body, most marked on the face and chest, were petechial hemorrhages, varying in diameter from 0.5 to 0.2 cm. Yellow fluid exuded from the mouth, and there were yellow incrustations about the nose. The abdominal layer of fat was from 1.5 to 1 cm. thick, appeared hemorrhagic, and was dusky yellow tan rather than bright yellow. The pericardial cavity was essentially normal except for scattered petechiae of both layers of the pericardium. Scattered petechiae were noted

Figure 1 (case 1). The adrenal glands showing extensive hemorrhage throughout the parenchyma.

in the peritoneal surface and within the mesentery, which had the same yellow-tan appearance as the superficial abdominal fat. The myocardium was a red tan. There were some petechiae of the endocardial surface of the left ventricle of the heart. There were no gross hemorrhages into the myocardium. Both lungs were crepitant, but filled with foamy reddish fluid. On sectioning, the lung parenchyma was mottled red. The gastric mucosa was a light tan and scattered petechiae were noted. The remainder of the gastrointestinal tract, including the rectum, also had scattered petechiae in the mucosa. They were noted within the mesentery. A few scattered petechiae were present in the cortex of the kidneys. Each adrenal gland weighed 14 grams and showed marked hemorrhage throughout the entire parenchyma (fig. 1). A spinal tap done before the autopsy revealed clear fluid. On making coronal sections through the brain, marked congestion was seen in the small vessels of the white matter through the entire brain, and some of these appeared to be poorly demarcated, suggesting petechiae.

Microscopic examination. Sections of the heart revealed a marked congestion of the small blood vessels, some of which contained more than the usual number of neutrophils. The aorta showed marked congestion of adventitial tissue with slight extravasation of blood. The lungs revealed some areas in which the alveoli were compressed together and other areas in which the alveoli were dilated and filled with homogeneous, pink-staining material. The smaller blood vessels were markedly congested with blood, and in some focal areas there was slight extravasation of blood into the interstitial tissue and alveoli. The liver showed marked congestion of the sinusoids. There were some small areas of extravasation of blood from the congested renal vessels. A few scattered polymorphonucleocytes were seen in the meninges. The adrenals revealed massive hemorrhage throughout the entire parenchyma of both glands, displacing and replacing normal gland tissue. Some degeneration of the parenchymal cells had occurred in hemorrhagic areas. No organisms in the tissues were observed with bacteriologic stains.

The anatomic diagnoses were: acute leptomeningitis, massive hemorrhage of both adrenal glands, acute diffuse myocarditis, and generalized petechiae of the skin (postmortem cultures from petechiae of the skin and spinal fluid were positive for *M. polymorpha).*

Postmortem examination of spinal fluid revealed 17,500 red blood cells, 25 neutrophils, and 750 lymphocytes per cu. mm.; glucose, 22.7, and protein, 67 mg. per 100 cc.

Case 2. A 23-year-old white airman first came to sick call on 5 January 1953, complaining of arthralgia, myalgia, and anorexia with onset that day. He stated that he had had a mild cold for about a week. He was treated symptomatically but his symptoms did not abate. At about 2300 hours he was awakened from sleep by vomiting, which continued throughout the night. The following morning at sick call, he complained of a severe frontal headache and red spots on his arms. He was immediately admitted to the hospital for observation of meningitis.

Physical examination on admission revealed a temperature of 103° F., rectally; pulse, 96; and blood pressure, 125/70. The patient was acutely ill with a generalized petechial rash and a stiff neck. He had marked stiffness of his neck. The Brudzinski and Kernig signs were positive. There was a mild serous exudate from the nose, and the pharynx was markedly hyperemic. The petechial rash, as noted above, was pronounced over the eyelids and on the anterior aspects of the legs.

Cloudy fluid was obtained from a lumbar puncture shortly after admission with an initial pressure of 280 mm. of water.

On 6 January 1953, he had a leukocyte count of 17,750 with 29 percent nonsegmented neutrophils, 71 percent segmented neutrophils, 7 percent lymphocytes, 1 percent monocyte, and 1 percent basophil. Hemoglobin was 13 grams. The urinalysis reaction was alkaline with a specific gravity of 1.033, and albumin and sugar negative; microscopic examination showed 2 to 4 white blood cells per high power field. Spinal fluid cell count was 1,320 with 95 polymorphonucleocytes and 5 lymphocytes per cu. mm. The amount was insufficient for other examinations. A gram-stained smear from the spinal fluid was reported as showing "gram-negative diplococci" which were highly sensitive to penicillin, streptomycin, chloramphenicol, aureomycin, and oxytetracycline (terramycin), moderately sensitive to 20 units of bacitracin, 10 μg. of streptomycin, and 10 μg. of aureomycin; it was resistant to bacitracin in 2 unit quantities.

On 8 January 1953, urinalysis revealed a specific gravity of 1.009 with an alkaline reaction; albumin, 1 plus; negative for sugar; microscopically numerous red blood cells were present. Subsequent urinalysis failed to reveal any abnormalities.

Sulfadiazine sodium was started intravenously on admission and he was given 1,000,000 units of penicillin every two hours. Dextrose and normal saline solution were also given intravenously. The blood pressure was stable throughout his hospital course. The patient continued vomiting for the first three days of his hospitalization, but on the fourth day he was able to take fluids by mouth, and on the tenth hospital day the penicillin was discontinued. Sulfadiazine was discontinued on the sixteenth hospital day.

At that time, the patient complained of a slight headache and pain and weakness in the right ankle, and his right ankle was moderately swollen. On the following day (23 January), his left knee became swollen, but attempted aspiration failed to yield any fluid. By 6 February, the patient was up and about the ward. The swelling diminished but recurred in the knee on 10 February and three days later in the ankle. On 13 February, the left knee and ankle were both swollen. The joint symptoms improved so slowly that he was given intravenous ACTH on 15 April. He showed some improvement on this regimen, and was discharged from the hospital on 22 April 1953.

BACTERIOLOGICAL STUDIES

Specimens from patient 1 were obtained at autopsy from blood, skin petechiae, and spinal fluid for culture aerobically, anaerobically, and under carbon dioxide. The blood cultures failed to show growth. Cultures from the spinal fluid and the skin showed the presence of gram-negative diplococci on blood agar aero-

bically, and on Mueller-Hinton medium under reduced oxygen tension. These organisms were placed on numerous media in an attempt to identify them. The results of the fermentation and biochemical tests are shown in table 1.

Blood and spinal fluid cultures were obtained from patient 2 on the day of admission to the hospital. Both cultures showed the presence of pleomorphic gram-negative organisms, mostly diplococci and were tentatively placed in the *Neisseria* group, based on the biochemical reactions shown in table 1.

TABLE 1. *Biochemical activities of organisms isolated from two cases of typical Waterhouse-Friderichsen syndrome*

Biochemical tests	Case 1	Case 2
Carbohydrates		
Glucose	Not fermented	Not fermented
Maltose	Not fermented	Not fermented
Sucrose	Not fermented	Not fermented
Lactose	Not fermented	Not fermented
Rhamnose	Not fermented	Not fermented
Raffinose	Not fermented	Not fermented
Xylose	Not fermented	Not fermented
Mannitol	Not fermented	Not fermented
Dulcitol	Not fermented	Not fermented
Salicin	Not fermented	Not fermented
Citrate utilization	Negative	Negative
Decomposition of urea	Negative	Negative
Indol production	Negative	Negative
Hydrogen sulfide production	Negative	Negative
Oxidase reaction	Negative	Negative

Because of their morphologic characteristics and the patients' clinical histories, these organisms were suspected of being *Neisseria meningitidis*. Failure of these organisms to ferment accordingly, raised the possibility of *Neisseria catarrhalis* being present. A negative oxidase test was obtained, however, indicating the organisms were not members of the *Neisseria* group. This was further borne out by the pleomorphic nature of the organism. References in the literature suggested the organism might be placed in the tribe *Mimeae*, and this line of investigation led to the diagnosis of an infection caused by *M. polymorpha*. This was substantiated by the Army Medical Graduate School where confirmation was obtained from cultures.[9]

Taxanomically, the tribe *Mimeae* belongs to the family *Parvobacteriaceae* and includes three genera, *Mima, Herellea,* and *Colloides.*[10] The organisms in this tribe are gram-negative to gram-variable, pleomorphic, motile or nonmotile rods often showing bipolar staining with little or no biochemical activity on carbohydrates. Serologic classification of the organisms is possible by means of specific antisera.

The organisms isolated in our two patients gave a similar morphologic picture to that described by De Bord[5] and Deacon[6] for the tribe *Mimeae, i. e.,* the organisms showed an extremely pleomorphic nature varying from gram-negative diplococci on primary isolation to short gram-negative rods and coccobacilli on subculture. The biochemical characteristics are typical of those described for fermentation group 4 as described by De Bord.[1] This group includes the type species *M. polymorpha* in which two organisms isolated in the present cases were finally placed, and this identification was confirmed.[9]

Scott and Mahoney[11] state that the number of isolations of *Mimeae* is considerable in those laboratories where attention has been called to the importance of these organisms. In most cases the organisms so isolated were classified as *Herellea* rather than as *Mima* strains, their importance being no less significant, however.

DISCUSSION

The two cases reported present several interesting facets. Investigation revealed that both airmen were residents of the same barracks and slept in the same room. They both became ill at about the same time. This opens vistas as to the epidemiologic factors long observed in epidemic cerebral meningitis.

Bacteriology technicians must be aware that *M. polymorpha* may be the causative agent in diseases of this type because, under ordinary circumstances, the organism might be classified as a member of the *Neisseria* group. This was well exemplified because cultures from patient 1 were sent to 13 other laboratories as a survey specimen. None recognized the organism, although one laboratory approached proper identification by placing it in the *Hemophilus* group. Six laboratories classified the organism as a species of the genus *Neisseria,* three reported it as *Alcaligenes faecalis,* one called it a species of the genus *Klebsiella,* another reported a gram-negative diplococci, and still another reported it as an unidentified organism. This illustrates how this organism may be erroneously classified. Its resemblance to a gram-negative diplococcus and failure to ferment certain carbohydrates often leads to a hasty classification as either a species of the *Neisseria* or *Alcaligenes* genera.

The fatal case exhibited a fulminating course with little clinical response to penicillin in the dose administered. The second case responded to penicillin and sulfadiazine. In both, sensitivity tests to the causative organism showed that in vitro penicillin was efficacious. The case of subacute bacterial endocarditis reported by Pike and co-workers responded to oxytetracycline.

The lesson to be learned from these two cases is that *M. polymorpha* can on occasion cause a fatal septicemia and it can be easily confused with members of the *Neisseria* group. The relative importance of the *Mimeae* as pathogens must await further observations.

SUMMARY

Of two patients with severe systemic infection due to *M. polymorpha*, one died and, at autopsy, revealed classical findings of adrenal hemorrhage and generalized petechiae.

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There is nothing constant in the human body. The nutrients ebb and flow into the cells. They all bear potentials for change. In this ever-shifting, ever-renewing of the constituents of the body, the cells must be renewed or there will be deterioration. These forces shape the patient's destiny.

—TOM D. SPIES, M. D.
in *Journal of the American Medical Association*, p. 193, Sept. 19, 1953

THE POSSIBLE ROLE OF HISTAMINE IN EPIDEMIC HEMORRHAGIC FEVER

An Evaluation of Antihistamine Therapy

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SINCE 1950 the disease entity, epidemic hemorrhagic fever, has occurred in spring and fall outbreaks among United Nations troops stationed in Korea. The Japanese described a probably identical disease which occurred in 1936-1939 among their soldiers then occupying Manchuria. Careful clinical and pathologic studies in Japan[1] suggested that the painless bite of a mite, parasitic to the field rodent, transmitted the causative agent. Recent workers have not been able to verify this. Intensive study by various investigators since 1950 has disclosed much of the natural course,[2-5] pathology,[6,7] and epidemiology[4] of the disease, although the causative agent and its mode of transmission remain unknown. Experience with hundreds of patients with this disease however has led to adoption of supportive therapy which has reduced mortality.[2]

Widespread vascular damage is believed by nearly all observers to be the basis for many of the clinical and pathologic features. Facial flushing, scleral and conjunctival injection, and hypotension have been related to capillary dilatation; facial edema, albuminuria, and retroperitoneal edema have been ascribed to altered capillary permeability; and capillary rupture has been considered responsible for the cutaneous and visceral hemorrhages. The histologic findings, which include capillary dilatation, engorgement, transudation of fluid, and finally, endothelial destruction with rupture and hemorrhage, correspond closely to these clinical features.

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POSSIBLE ACTIVITY OF HISTAMINE

The very widespread nature of these changes suggested that a humoral agent may be the active toxin in the pathogenesis of epidemic hemorrhagic fever. Histamine is one of the many substances capable of damaging blood vessels, particularly capillaries. Many of the changes observed in experimental histamine intoxication of human beings and animals correspond to changes seen in the disease. Congestion and hemorrhage are found in the kidneys, gastrointestinal tract, and pituitary gland with regularity at autopsy. Histamine is normally found in high concentrations in the mucosa and submucosa of the stomach and small intestine[10] and in the kidneys.[11] Congestion and hemorrhage at these sites may be the result of histamine release. Although data on histamine content of the pituitary gland are scant, impure pituitary extracts contained histamine[12] and it may be speculated that release of histamine causes the marked hemorrhage and necrosis seen in the pituitary gland at autopsy.

Certain hematologic changes characteristic of hemorrhagic fever may also point to histamine activity. Thrombocytopenia and the presence of macrothrombocytes have been noted early in the illness and eosinophilia varying from 5 to 18 percent occurs during early convalescence.[2, 4] Intravenous administration of histamine caused a 30 percent reduction in platelets in dogs, and a clumping and early disintegration of platelets in both human beings and dogs.[13] There is also some evidence that carriage of histamine is a function of the eosinophilic myelocyte,[14] and it is possible that the eosinophilia occurring during convalescence from hemorrhagic fever may represent reaccumulation of histamine after its discharge early in the disease.

If increased histamine activity occurs in hemorrhagic fever, the causative agent may produce histamine or a similar substance, but it seems more likely that an antigen-antibody reaction is concerned. Although no immunologic data are available on hemorrhagic fever, certain hematologic observations suggest the presence of an immune reaction. The blood and bone marrow smears from patients with hemorrhagic fever contain increased numbers of plasma cells (fig. 1), as well as atypical lymphocytes. Such cells are seen in virus infections, serum sickness, penicillin reactions, and other states in which antibodies are being formed. Pariser and associates[15] have demonstrated that plasma cell counts of blood and marrow in human beings undergoing an anamnestic response to diphtheria toxoid rise. It may be theorized that the hematocellular response in hemorrhagic fever parallels the production of antibody formed in response to the antigenic stimulus of the causative agent. Further, throm-

bocytopenia is frequently observed in certain allergic states and may be considered as additional evidence that an anaphylactoid reaction may occur in hemorrhagic fever.

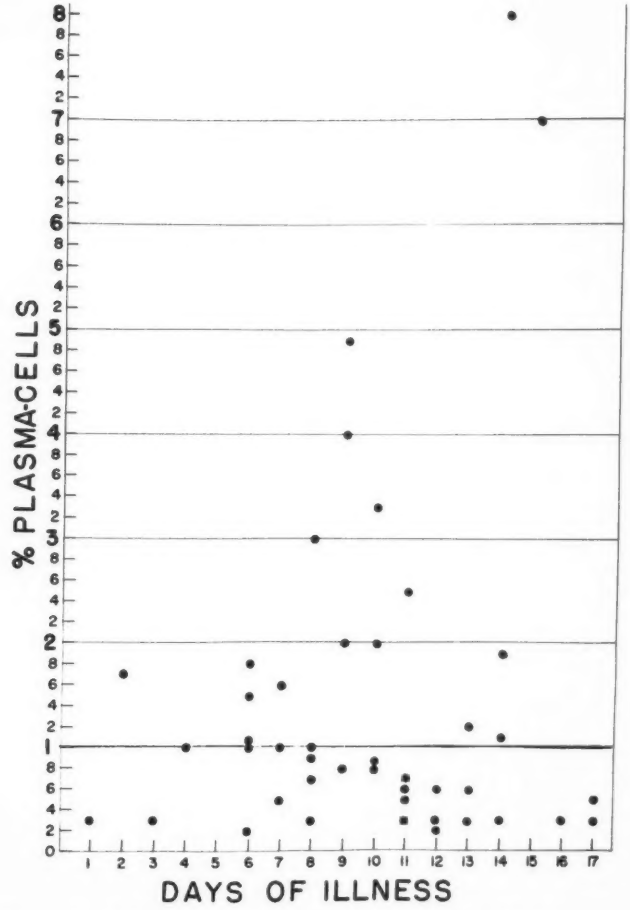

Figure 1. Detection of plasma cells in peripheral blood smears of 14 patients with epidemic hemorrhagic fever.

The possibility that histamine might be concerned in the patho genesis of hemorrhagic fever suggested a trial of antihistamin therapy. During the 1951 fall outbreak of the disease, a group o 14 patients was treated with large doses of diphenhydramin hydrochloride (benadryl). At that time little was known of th natural history of the disease and although the response of sev

eral patients seemed favorable, no definite conclusions could be drawn.

A carefully controlled series was used during the 1952 spring outbreak of the disease with the hope of critically evaluating any possible effect of antihistamine therapy on the course of hemorrhagic fever. Alternate patients were placed in control or diphenhydramine hydrochloride-treated groups according to their army serial number. Patients used as controls received phenobarbital in sedative doses and the other patients received diphenhydramine hydrochloride in doses up to 800 mg. daily. The two drugs were prepared to have an identical appearance so that ward physicians did not know until the conclusion of the study which of their patients were treated with diphenhydramine hydrochloride.

Although the diagnosis was suspected frequently as early as 48 hours after the onset of illness, no patient was included in the study until a proteinuria of grade three-plus or more appeared. Thus, the earliest treatment with diphenhydramine hydrochloride was begun 72 hours after onset of the disease. The criteria for diagnosis were identical to those used at the Army hemorrhagic fever center. Twenty-four patients were studied; 11 received diphenhydramine hydrochloride and 13, phenobarbital. There were no fatalities.

Table 1 indicates the incidence and duration of the major symptoms in the 24 patients studied. All symptoms disappeared earlier in the diphenhydramine hydrochloride-treated group than in the control group. The difference between the two groups is not dramatic.

Table 2 indicates the incidence and duration of physical signs in the two groups. With the exception of facial flush, all physical signs returned to normal sooner in the diphenhydramine hydrochloride-treated patients than in the control group. This study was done in the spring, when pronounced sunburns made accurate evaluation of flushing difficult. In the control group, two patients had scleral hemorrhage when phenobarbital was begun and four others developed this sign while receiving the drug. No patient in the diphenhydramine hydrochloride-treated group had scleral hemorrhage before or during treatment.

Fever of 102° F. or more was present at the onset of treatment in six of the 13 patients in the control group and in nine of the 11 patients treated with diphenhydramine hydrochloride. In general, the febrile course of these patients was similar, except for the response of fever in the first day of treatment. The nine febrile patients treated with diphenhydramine hydrochloride showed a diminution of fever during the first 24 hours. Two of the six febrile patients in the control group had a fall in temperature, three had a rise, and one, no change.

TABLE 1. *Duration of symptoms in hemorrhagic fever*

Symptom	Diphenhydramine hydrochloride-treated group (11 patients)			Control group (13 patients)		
	Number of patients	Range (days)	Average (days)	Number of patients	Range (days)	Average (days)
Back pain	10	1-6	2.5	11	2-7	4.6
Headache	10	1-4	1.6	6	1-5	2.3
Anorexia	9	1-4	1.8	13	1-8	3.7
Abdominal pain	8	1-5	2.9	11	1-7	3.8
Ocular complaints	7	1-4	2.3	5	1-6	2.8
Nausea	7	1-5	2.4	12	1-8	3.7
Vomiting	5	1-5	2.8	11	2-8	3.5
Sore throat	4	2-4	2.5	6	2-5	3.2
Hiccup	1	2	2.0	3	3-6	4.6

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TABLE 2. *Duration of physical signs in hemorrhagic fever*

Physical sign	Diphenhydramine hydrochloride-treated group (11 patients)			Control group (13 patients)		
	Number of patients	Range (days)	Average (days)	Number of patients	Range (days)	Average (days)
Conjunctival and scleral injection	11	2-4	2.5	12	1-6	4.1
Pharyngeal injection	10	1-4	2.9	13	2-6	3.7
Facial flush	8	1-6	3.5	10	1-4	2.4
Pharyngeal petechiae	6	2-4	2.5	8	1-5	3.0
Abdominal tenderness	7	1-4	1.9	7	1-10	4.1
Costovertebral angle tenderness	6	1-7	2.8	9	3-8	4.5
Conjunctival and facial edema	6	1-3	2.0	10	1-6	3.5
Conjunctival and scleral hemorrhage	0			6		

No patient in the entire series had shock. The blood pressure curves for the two groups were similar and the incidence and degree of hypertension during recovery was the same for each group.

Nonprotein nitrogen and blood urea nitrogen were measured daily. No significant difference was observed in the duration or amount of nitrogen retention or proteinuria between the two groups.

Measurements of urinary output revealed that oliguria was less frequent in patients who received diphenhydramine hydrochloride. Only five of 11 patients in this group developed oliguria (output of less than 1,000 cc. in 24 hours) whereas nine of the 13 patients in the control group developed oliguria.

DISCUSSION

The data presented are difficult to evaluate. The most impressive differences between the two groups consist of fewer instances of oliguria and scleral hemorrhage in the group of patients treated with diphenhydramine hydrochloride. Conceivably, this was a chance result of more severe cases among the control group. The more rapid disappearance of symptoms and physical signs in the patients treated with diphenhydramine hydrochloride may merely reflect nonspecific effects of the drug rather than specific antihistaminic effects on the course of the disease. Because no specific treatment for hemorrhagic fever has been established antihistamines may have some value in symptomatic therapy and further evaluation seems to be indicated, as well as attempts to delineate the possible role of histamine as a pathogenic agent.

SUMMARY

In the pathogenesis of epidemic hemorrhagic fever histamine may play a major part. Antihistamine therapy of hemorrhagic fever was evaluated in a small, controlled series, using a "blind" technic. The results were equivocal, but suggest the need for further evaluation of this approach.

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Serologic Tests for Cancer

Unless some serodiagnostic test which will be suitable for general screening purposes is developed, it is difficult to see how there can be much improvement in the early diagnosis of cancer, particularly internal cancer. By present diagnostic means it is difficult to diagnose cancer in its earliest, localized, and particularly the subclinical stage before any symptoms are present. There is no known chemical property which is characteristic for cancer alone. There is much to learn about the blood proteins, and methods will have to be found to further fractionate these proteins. Negative results are just as important as positive results in many instances, and it may be that specific tests will be found which will be applicable for special types of cancer and not necessarily for all cancers. At present there is no serodiagnostic test that is completely specific for cancer, but an open-minded, conservative attitude must be maintained by physicians on this subject, for there is prospect that much useful, practical information will come from present studies and that with added knowledge a general screening test for cancer can be developed.

—JUSTIN J. STEIN, M. D.
in *California Medicine*, p. 4, Jan 1954

MYOCARDIAL INFARCTION IN YOUNG MEN

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CORONARY artery disease occurs most commonly in the sixth, seventh, and eighth decades of life, but atherosclerosis of the coronary arteries can occur in all age groups.

Smith and Bartels[1] in 1932 reported two cases of myocardial infarction in patients aged 35 and 36 years, and stated that a review of the literature up to that time revealed only 20 confirmed cases of myocardial infarction in patients under 40 years of age. In 1937, Durant[2] reported seven patients 35 years of age and under, observed during a four-year period. In the same year Glendy and associates[3] reported 100 patients under the age of 40 collected from several hospitals and clinics in a three-year period, but only eight were under 30. French and Dock[4] in 1944 analyzed the clinical and pathologic features of fatal coronary artery disease in 80 soldiers aged 20 to 36 from data received by the Armed Forces Institute of Pathology since the beginning of World War II. Most of the patients in this series had been overweight, and in every one arteriosclerosis had been the basic lesion.

From these reports it appears that coronary artery disease occurring before middle life cannot be considered a rare entity. Because young male adults make up the largest segment of the practice of military medicine, I wish to analyze my experiences with myocardial infarction in patients 35 years of age and under.

DESCRIPTION OF THE GROUP

During the past four years, 14 patients in the specified age group, with confirmed diagnosis of myocardial infarction, have been treated at this hospital. The diagnosis was established in 12 cases on the basis of typical clinical features plus unequivocal electrocardiographic changes. In two patients, death occurred before electrocardiographic studies could be made, but postmortem studies corroborated the clinical impression.

The youngest patient in the series was 23 years old and four patients were 27 years of age or under. The largest number of cases occurred in the 34- and 35-year-old groups, which included eight of the 14 patients.

From U. S. Naval Hospital, Philadelphia, Pa.

Body build of the patients was roughly divided into: slender, medium, heavy, and obese. About 50 percent of the group could be classified as heavy or obese. Admittedly, this series is small; however, percentagewise, overweight occurred less frequently in this group than in the series reported by French and Dock, who found it in 91 percent of their patients. They stated that overweight is a strong presumable causative factor in coronary artery disease of young men. It is interesting to note that none of the patients in the present series was classified as slender.

The height of the patients was recorded in 12 of the clinical records. If 5 feet 10 inches is accepted as average adult male height, 75 percent of the patients were below average height. The shortest was 5 feet 2 inches tall, and the height of 45 percent of the group was 5 feet 7 inches or less. None of the patients were as tall as 6 feet.

In reviewing the past medical histories of these patients, there was a paucity of possible causative agents. In 10 patients the past history was completely negative from a cardiovascular point of view. One patient had had tachycardia four years previously, with negative electrocardiographic findings. Two patients were known to have had hypertension. One of these had had a previous sympathectomy and currently was taking hexamethonium chloride and 1-hydrazinophthalazine hydrochloride (apresoline). One family history revealed that a brother of the patient had a myocardial infarction at the age of 40.

There were no premonitory symptoms in slightly over half of the group, the symptoms of infarction being acute and unheralded. Five patients had mild exertional angina or vague chest pains ranging from three days to three weeks before the attack. One patient had intractable nausea and vomiting for 24 hours prior to the onset of acute substernal pain.

In 12 cases, the time of day when the attack occurred was recorded. The patients noted the first symptoms during what could be classified as working hours; that is, between 0800 and 1800. Four cases occurred from 1800 to midnight and five from midnight to 0800. The degree of physical activity at the time of first symptoms was recorded in 12 instances. Five patients were presumably awakened from sleep with acute substernal pain, five were engaged in routine physical activity, and two were performing strenuous physical activity.

In 75 percent of the group the initial symptoms could be classified as "textbook" myocardial infarction in that the patients complained of a sudden, severe, crushing substernal pain radiating down one or both arms and associated with weakness and sweating. Two patients complained of dull, pressure-like pain

in the epigastrium radiating to the neck or arms. In one of these, pain gradually rose and centered in the substernal area.

The pain was described by two patients as a burning sensation in the left anterior chest. In the remaining case the complaint was of a substernal drawing sensation.

The symptoms in one patient are presented as being atypical for this series. A 31-year-old man was perfectly well until 24 hours before admission. His evening meal had included sauerkraut and frankfurters, and before retiring he had eaten a liverwurst sandwich and iced, canned fruit juice. He was awakened with a dull, pressure-like pain in the epigastrium, which did not radiate, associated with nausea and vomiting which persisted throughout the day. He was not improved by symptomatic therapy at sick bay, and consequently was admitted to this hospital with the diagnosis of acute gastritis. The past history and family history were not contributory. Physical examination revealed an acutely ill man with marked epigastric tenderness not associated with muscle spasm. There were no other pertinent physical findings. Thirty-six hours after the onset of symptoms the epigastric pain shifted to the substernal area and the patient was re-examined. At this time a precordial, systolic friction rub was detected and an electrocardiogram revealed evidence of an acute anterior myocardial infarction. That coronary occlusion can simulate a pathologic condition below the diaphragm is well recognized, but in this case it was unsuspected because of the relative youth of the patient.

With the exception of apprehension and pain, the physical examination on admission was negative in 50 percent of the patients. The pertinent physical findings in the remaining seven patients were as follows: Two were hypertensive, two presented arrhythmias, two were in shock, and a precordial friction was detected in one. In only one case was cardiomegaly present. This observation is in agreement with French and Dock, who found no significant cardiac hypertrophy in their series of 80 cases.

With the exception of the white blood count, sedimentation rate, and electrocardiographic records, laboratory findings were within normal limits. Electrocardiographic records were available in 12 of the cases; however, two patients died before this procedure could be employed. Seven patients revealed evidence of anterior wall infarction and the remaining five showed posterior wall involvement. In one case serial electrocardiograms were equivocal for the first three days, after which time evidence of posterior wall infarction appeared.

Death occurred in three of the 14 patients; two patients died within three hours of their initial symptoms, and the third died

24 hours after admission. Postmortem studies were permitted in two of the three fatal cases.

CASE REPORTS

Case 1. A 34-year-old obese man had been well until two hours before admission, when he developed a sudden, severe, constricting precordial pain associated with marked dyspnea. On admission he was in shock and in marked respiratory distress. Although the usual supportive measures were employed, he died 25 minutes later. Postmortem studies revealed moderately advanced arteriosclerotic changes in all the coronary vessels. The anterior descending branch of the left coronary artery was found to be obstructed by a firm thrombus. There was an area of infarction in the anterior wall of the left ventricle near the apex.

Case 2. A 35-year-old obese man, who had had no previous cardiovascular complaints, was awakened from sleep with severe, crushing, substernal pain that radiated down both arms. He died in the emergency room 10 minutes after arrival. Postmortem studies revealed marked atherosclerosis of all coronary arteries with complete occlusion of the circumflex branch of the left coronary artery by a red thrombus.

Of the 11 patients that survived, the hospital course was uneventful in seven. Two patients developed frequent premature ventricular contractions which were controlled by quinidine. One patient complained for one week of crampy substernal pain, relieved by glyceryl trinitrate, and one patient had persistent left shoulder pain for several weeks.

COMMENTS

The findings in these 14 patients parallel closely those reported by numerous authors. It is disconcerting that advanced coronary artery disease can be present in younger patients without premonitory symptoms, apparent loss of cardiac functional capacity, or cardiomegaly. Shortness of stature and overweight occurs too frequently to be coincidental. Therapeutically, we cannot change height-determining genetic factors; however, slenderizing does fall within the province of the medical profession. Too often the stocky young man has become tolerant of his obesity and accepts it as a familial characteristic. Weight reduction in such an individual is no guarantee against premature coronary arteriosclerosis, but unquestionably cardiac work at rest will be decreased as normal weight is approached, an accomplishment worthy of the combined efforts of patient and physician. Vague anginal-like symptoms must be viewed with suspicion in the younger age groups and are deserving of careful electrocardiographic investigation.

SUMMARY

In an analysis of myocardial infarction in 14 hospital patients 35 years of age and younger during the past four years, overweight was a common finding and in no instance was underweight encountered. Seventy-five percent of the patients were below average, adult, male height. Premonitory symptoms occurred in five patients, but in most instances were atypical for angina pectoris. Mortality rate for this series was 21 percent.

Avoidance of obesity and electrocardiographic investigation of chest pain in the younger age groups are urged.

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Economy in Air Evacuation of Patients

Transportation through the ages has changed the strategy of war and the activities of peace. The unique capability of helicopters, combined with larger air carriers, provides the means to furnish civilian and military medical care at great economies in personnel and facilities. Air transportation reduces the need in evacuation of wounded for many treatment units formerly required because of the limited facilities of surface carriers. Air transportation can also provide care in transit. The full acceptance of the helicopter-airliner combination would permit elimination of many medical facilities and supplementary means of transportation now used in combat zones. Additional savings to the nation's medical economy could be obtained by the use of aerial hospitals. There would be practically no relocation of civilian medical effort in war.

—M. S. WHITE, Brigadier General, USAF (MC), and
ROBERT W. MERKLE, Major, USAF (MC)
in *Journal of the American Medical Association*, p. 22, Sept. 5, 1953

STANDARDIZING A METHOD FOR CLINICAL HEMOGLOBINOMETRY

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A RECENT survey of the comparative accuracy of the various methods of hemoglobinometry used in the clinical laboratories of the armed services disclosed a disturbing lack of uniform results. For this reason, the provision of some means whereby these laboratories can standardize the measurement of hemoglobin is desirable. The department of hematology of this school accordingly has been authorized to establish a hemoglobin reference facility for the clinical laboratories of the armed services, for the purpose of providing accurately measured, stable solutions of hemoglobin that can be used as standards. The standards may be obtained by clinical laboratories of the armed services from this school.

The solutions are prepared as cyanmethemoglobin, the most stable of the various hemoglobin pigments. Drabkin[1-3] has kept similar solutions in his laboratory for six years without deterioration. Solutions we have prepared have been tested by Drabkin[4] and were found to agree with his own standards through the second decimal place. The standards of Dr. E. J. King and those of Drabkin are in similar agreement,[4] therefore it may be concluded that the hemoglobin solutions provided are both accurate and stable. They should be sealed in carefully matched tubes, and together with the blank solution that accompanies them should be refrigerated in darkness but should not be frozen.

The value of these standards was established using a Beckman DU spectrophotometer by reference to the optical density of solutions of copper sulfate as described by Drabkin.[4] The use of copper sulfate as the standard for calibration of the Coleman Jr. spectrophotometer for clinical laboratories is not practical because it involves the use of a multiplication factor which magnifies small errors inherent in the instrument.

The standards, representing blood diluted one part in 250 parts of the solution, are provided in three tubes with concentrations of

From Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D. C.

hemoglobin corresponding to 5, 10, and 15 grams per 100 ml. (fig. 1). The readings of the standards in a properly calibrated photometer are plotted on semilogarithmic graph paper and the points connected by a line. This graph may be used to establish the concentration of hemoglobin in "unknowns."

STANDARDIZATION OF EQUIPMENT FOR HEMOGLOBINOMETRY

It would be futile to establish accuracy in one aspect of the method without achieving corresponding accuracy elsewhere. The

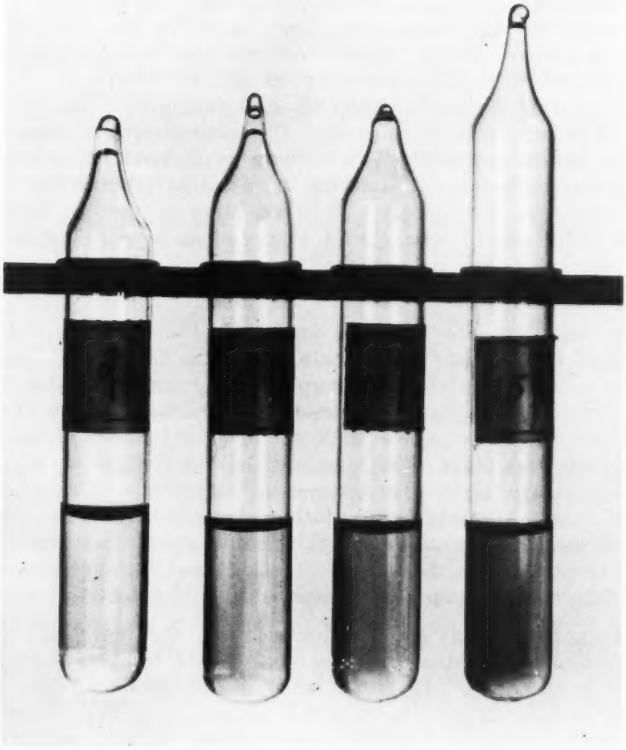

Figure 1. The cyanmethemoglobin standard solutions flame-sealed in matched spectrophotometer tubes. The tube marked 15 contains 0.02 ml. of blood in 5 ml. of Drabkin's solution. The concentration of hemoglobin in the blood was adjusted to 15 grams per 100 ml. The arrow indicates the surface of the tube that is to face the light source in the spectrophotometer.

standardization of equipment used for hemoglobinometry by a conscientious technician familiar with the use of an analytic balance requires half a day.

*Calibration of the Coleman Jr. spectrophotometer.** A survey of a number of these instruments in clinical laboratories of the armed services has indicated that some have serious errors of wave-length calibration. This instrument is provided with a factory-calibrated didymium standard filter to verify the calibration. The steps in calibration are:

1. The battery is checked with a volt meter (6 volts), or the specific gravity of the battery fluid is measured (1.120 for low specific gravity batteries, 1.250 for high specific gravity batteries).

2. The instrument is turned on and allowed to warm up for 20 minutes. The coarse and fine knobs are turned as far counterclockwise as possible.

3. The photocell is darkened by placing a cuvette adapter in the well with its key 90° clockwise to the well keyway, thereby obstructing completely the beam of light.

4. The galvanometer zero-adjustment lever is located under the raised housing to the left of the well. By use of a pencil point to move the lever, the center of the galvanometer light beam is brought to coincide with the zero index on the left side of the scale panel.

5. The wave-length scale is set at exactly 610.

6. The well opening is covered and, by using the coarse and fine knobs, the center of the galvanometer light beam is brought to coincide with 100 percent light transmittance on the right of the black scale.

7. The glass surfaces of the didymium calibrating filter are carefully cleaned and the filter inserted into the well, with the key still seated in the slot. The galvanometer reading (light transmittance) should correspond with the number engraved on the side of the standard.

8. If the measured value of light transmittance and the engraved number do not agree, an adjustment should be made after removing the metal panel on the bottom of the instrument by unscrewing the four rubber feet. Squarely in the center of the instrument a large brass thumb screw will be seen. If the value of light transmittance was less than that engraved on the standard, the thumb screw should be turned clockwise (from its top) two clicks for each one percent difference in light transmittance. If the measured value of light transmittance was more, the screw should be turned counterclockwise.

*Stock No. 4-398-350, Armed Services Catalog of Medical Materiel.

9. The procedure described in step 7 is repeated. If the measured value of light transmittance fails to agree with the number on the standard, step 8 is repeated.

Selection of matched colorimeter cuvettes. The 19- by 150-mm. tubes (Stock No. 4-398-440, Armed Services Catalog of Medical Materiel) provided with the Coleman Jr. spectrophotometer may vary by as much as five percent in light transmission. To obviate this source of error it is recommended that tubes be selected to match the reagent blank tube provided with the standard hemoglobin solution. This blank tube and the three standard tubes will have been matched prior to shipment from this laboratory. The method of selection follows:

1. After several dozen class B cuvettes are cleaned thoroughly, 5 ml. of Drabkin's solution is placed in each.

2. The zero setting of the instrument is verified and the wave-length scale set at exactly 540. The cuvette blank is placed in the well with the arrow toward the light beam and covered with the plastic light shield. By using the coarse and fine adjustments the galvanometer light beam is brought to coincide exactly with 30 percent light transmittance on the black scale. If the blank solution shows any turbidity, it is emptied, the tube cleaned, and your own solution substituted. Turbidity should not form in the tube if it is kept in the dark in the refrigerator. The cold tube must be dry and polished free of condensed moisture, lint, and finger marks before being placed in the well.

3. One at a time, the polished cuvettes to be tested are placed in the well and covered with the plastic light shield. Rotation of the tube will cause a slight fluctuation of galvanometer beam. Where the light beam coincides with 30 percent light transmittance, a scratch mark is made on the tube to indicate the point that faces squarely into the light beam. It is advisable to set these tubes aside to be used only for the hemoglobinometry. Precautions should be taken to prevent scratching when using or cleaning them. Test tube racks of wood or coated wire are recommended.

Calibration of blood diluting pipettes.[5] The 0.02-ml. Sahli pipettes are accurate only to about ± 5 percent. It is recommended therefore that several pipettes be carefully calibrated for use in hemoglobinometry. For this purpose the following equipment is required: Redistilled mercury; tuberculin syringe; single-hole size 0 rubber stopper; petrolatum or stopcock grease; apparatus support stand; 50-ml. beaker; weighing bottles; thermometer; and analytical balance. The steps in calibration are:

1. Several 0.02-ml. pipettes are cleaned with concentrated nitric acid, washed, and dried.

2. Pipettes, mercury, weighing bottles, balance, and thermometer are kept in the same room and the procedure is not begun until all have reached the same temperature. Mercury is placed in the beaker. The weighing bottles are carefully weighed, and the weights recorded.

3. The plunger of the tuberculin syringe is heavily coated with petrolatum or stopcock grease and the syringe is assembled. The tip of the syringe is inserted firmly into the hole in the rubber stopper and the stopper with the syringe on top is clamped to a heavy apparatus support about 18 inches above the level of the bench in a vertical position.

4. The base of a pipette is firmly inserted into the other end of the stopper.

5. The plunger of the syringe is slightly withdrawn. The tip of the pipette is immersed in the mercury. Careful upward movement of the syringe's plunger by twisting fills the pipette with mercury. When mercury reaches the 0.02-ml. mark the beaker is rapidly removed. Usually there will be no movement of the level of the mercury and no mercury will be lost from the tip. If either occurs, the maneuver is repeated. The pipette must not be moved or jarred. When a successful measurement has been made, the mercury is discharged from the pipette into a weighing bottle. Determinations should be made in duplicate. The bottles which have been previously weighed are weighed again with the mercury, and the weight of the mercury is thereby established.

6. The volume occupied by this weight of mercury at the prevailing temperature is established by dividing the weight by a temperature correction factor.

Temperature	Correction factor
20° C.	13.547
21° C.	13.545
22° C.	13.543
23° C.	13.541
24° C.	13.539
25° C.	13.537
26° C.	13.534
27° C.	13.532
28° C.	13.530
29° C.	13.528
30° C.	13.526

7. The actual volume of the pipette thus determined is expressed in milliliters. This figure, divided by 0.02 (the number

of ml. supposed to be measured by the pipette), gives a correction factor for the pipette. This should be scratched on the side of the pipette with a diamond-point pencil.

Example: If the weight of the weighing bottle equals 39.8731 grams and the weight of the bottle plus mercury equals 40.1311 grams, the difference in weight is 0.2580 gram. This value, divided by a temperature correction factor for 29° C. (13.528), equals 0.0191 ml. of mercury delivered from the 0.02-ml. pipette; 0.0191 is divided by 0.0200 ml., and the result, 0.96, represents the correction factor for the pipette. To use this factor, the transmittance reading of a cyanmethemoglobin solution prepared with this pipette is multiplied by 0.96, and the corrected transmittance reading for a volume 0.0191 ml. is obtained.

METHOD FOR CLINICAL HEMOGLOBINOMETRY

Preparation of Drabkin's solution. The amount to be prepared should be governed by the amount of hemoglobinometry required of the laboratory. Five milliliters of solution are used for each test. To prepare 1 liter of solution, 1 gram of $NaHCO_3$, 52 mg. of KCN, and 198 mg. of $K_3Fe(CN)_6$ are used. These are dissolved in distilled water to make 1 liter of solution which should be stored in a brown bottle because light causes a precipitate to form. Although Drabkin's solution contains little cyanide, it is regarded as a poison.

Precautions regarding the use of cyanide. Salts and solutions of cyanide are poisonous and care should be taken to avoid getting them into the mouth or inhaling their fumes. Cyanide should be handled with the same caution as concentrated acids and pathogenic bacteria. The minimum lethal dose of anhydrous cyanic acid for humans is 36 mg.[6] In a liter of Drabkin's solution there are 115 mg. of cyanide as CN. The smallest dose of potassium cyanide that has been known to kill a human is 300 mg.[6] This amount of potassium cyanide is equivalent to that present in 6 liters of Drabkin's solution.

The cyanmethemoglobin method as described in this article has been reviewed by the staff of the Army Environmental Health Laboratory which reported: "It is the opinion of this office that the analytic procedures described can be performed without undue hazard to laboratory personnel providing proper caution is used." The following specific precautionary measures are recommended:

1. Pipettes should be filled with a suction bulb.

2. Blood should be mixed with the cyanide solution by swirling.

3. If small amounts of cyanide compounds are accidentally spilled on the laboratory bench or on the floor during the weighing

procedure, the dry powder should be wiped up with a damp cloth and discarded in a suitable container.

4. Cyanide salts should be stored in a locked cupboard.

Calibrating the Coleman Jr. spectrophotometer for the cyanmethemoglobin method.

1. To span the light beam of the Coleman Jr. spectrophotometer there must be at least 6 ml. of solution in the 19-mm. cuvette. The accurate measurement of 6 ml. is cumbersome because transfer pipettes are not available in that size and serologic pipettes are inadequate. Therefore it is recommended that the instrument be slightly modified to permit accurate readings with a smaller volume of solution. A 5-mm. slice should be cut from the top of a No. 1 rubber stopper and dropped into the cuvette adapter so that it lies flat on the bottom. This elevates the cuvette sufficiently that 5 ml. of solution span the light beam.

2. The tubes containing the hemoglobin standards, after removal from the refrigerator, should be wiped free of condensed moisture before they are used. When they are placed in the well of the spectrophotometer, the arrow on the side of the tube should face squarely toward the source of light.

3. The blank tube is placed in the well of the warmed-up Coleman Jr. and the galvanometer beam is adjusted to 100 percent light transmittance (at the right of the black scale) with the wave-length scale at 540.

4. Tube 5 is next placed in the well. The reading on the black scale (percentage of light transmittance) is recorded. The blank is checked and the percentage of light transmittance is recorded for tube 10. Tube 15 is measured in the same manner.

5. The readings are transcribed onto semilogarithmic graph paper. The abscissa represents grams of hemoglobin, and the ordinate the percentage of light transmittance. Tube 5 represents 5 grams of hemoglobin per 100 ml. On the vertical line representing 5 grams of hemoglobin on the graph paper, a dot is placed at the level of the percentage of light transmittance indicated by the reading on the Coleman Jr. for tube 5. in the same manner the percentage of light transmittance for tube 10 (10 grams of hemoglobin per 100 ml.) and tube 15 (15 grams of hemoglobin per 100 ml.) is plotted (fig. 2).

6. A line is drawn through the three points and a table is prepared from this graph to show what each reading of the percentage of light transmittance corresponds to in grams of hemoglobin per 100 ml. The table can be mounted between sheets of plastic or clean x-ray film. Each spectrophotometer must be

standardized individually against the cyanmethemoglobin solutions and should be frequently checked thereafter.

7. The standards should be returned to the refrigerator. They should be used once a week to check the calibration of the instrument.

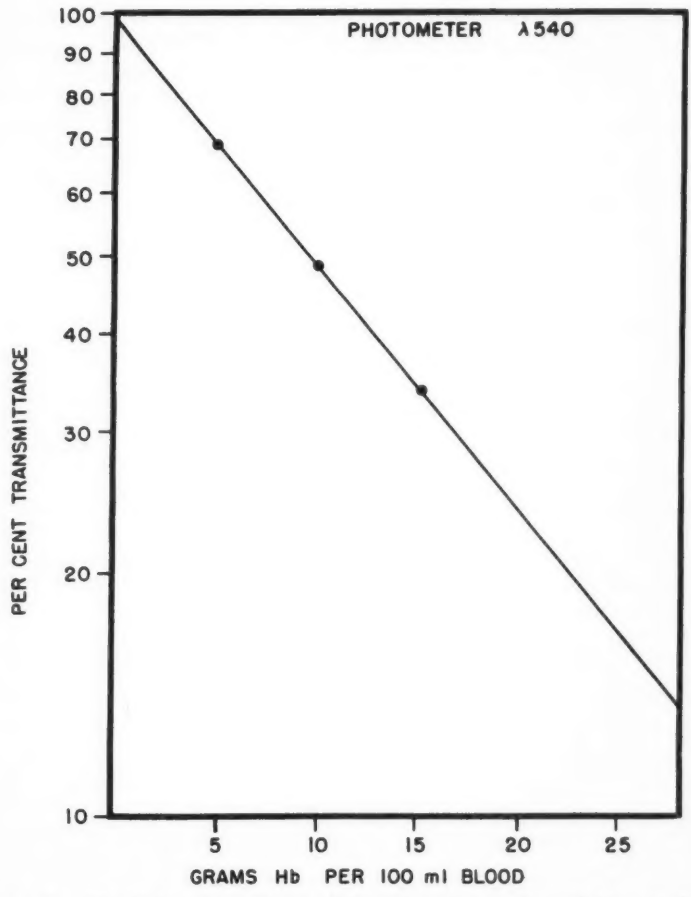

Figure 2. The light transmittance of the three cyanmethemoglobin standard solutions plotted on semilogarithmic graph paper. From this line every value of transmittance can be translated into a corresponding value of hemoglobin concentration.

Method for hemoglobin determination with cyanmethemoglobin.

1. Exactly 5 ml. of Drabkin's solution are measured into two matched Coleman Jr. tubes. To one tube, 0.02 ml. of whole

blood is delivered with a Sahli pipette which is rinsed repeatedly so that all of the blood is delivered. Blood and solution are mixed by swirling and allowed to stand for 10 minutes. The other tube serves as a blank.

2. The cuvette adapter is altered as described.

3. The blank tube is placed in the well of the warmed-up Coleman Jr. spectrophotometer and the wave-length scale is set at 540. Using coarse and fine adjustment knobs the galvanometer light beam is adjusted to coincide with 100 percent light transmittance at the right of the black scale. The tube containing the hemoglobin solution is substituted for the blank tube and the percentage of light transmittance is read on the black scale. The value obtained is multiplied by the correction factor of the pipette. The result is translated into grams per 100 ml. of hemoglobin by use of the graph constructed.

4. Where a large series of hemoglobin determinations are to be made simultaneously, the same 0.02-ml. pipette can be used for each. Two small beakers, one containing water, the other acetone, should be available. The pipette is attached to a length of latex tubing about 20 inches long with an ordinary plastic mouthpiece at one end. After the first specimen of blood has been measured the pipette is rinsed three times with water. The water is expelled in a waste receptacle and the outside of the pipette is wiped with gauze. The pipette is then washed three times with acetone, the outside wiped, and air sucked through the pipette until the inside is dry. The whole procedure requires about 10 seconds. It reduces the number of calibrated pipettes needed for a large laboratory service and it simplifies the use of the correction factor of the pipette. Pipettes should be cleaned with concentrated nitric acid at least once a week.

As a trial of this method, sets of standards (fig. 1) were sent to several Army hospitals followed later by a questionnaire to learn if the method was in use. A tube of blood was also sent to test the accuracy of their hemoglobinometry. The concentration of hemoglobin in the sample (13.25 grams per 100 ml.) had been carefully established by comparison with standards checked by Drabkin. Ten laboratories responded. The results shown in table 1 indicate that satisfactory hemoglobinometry had been achieved using the method recommended.

SUMMARY

Using the Coleman Jr. spectrophotometer and Drabkin's solution, a method of standardizing hemoglobinometry for clinical use is described. The procedure for standardization of the equipment involved is given in a detailed description of the methods

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TABLE 1. *Hemoglobinometry trial in army hospital laboratories with a sample of blood that contained 13.25 grams per 100 ml.*

Laboratory	Method of calibration	Method of hemoglobinometry	Results	
			Grams per 100 ml.	Percent of true value
Group 1				
1	AMSGS*	Cyanmethemoglobin	13.2	100
2	AMSGS	Cyanmethemoglobin	13.3	100
3	AMSGS	Cyanmethemoglobin	13.3	100
4	AMSGS	Cyanmethemoglobin	13.4	101.1
5	AMSGS	Cyanmethemoglobin	12.9	97.9
6**	AMSGS	Cyanmethemoglobin	13.0	98.1
Group 2				
6**	AMSGS	Acid hematin	12.7	95.8
7	AMSGS	Acid hematin	12.5	94.3
8	AMSGS	Oxyhemoglobin	12.0	90.6
Group 3				
9	Iron analysis	Cyanmethemoglobin	11.7	87.3
Group 4				
10	Unknown	Oxyhemoglobin	11.9	89.8

*AMSGS = Army Medical Service Graduate School.
** Laboratory 6 reported 2 methods.
Group 1 = Laboratories using AMSGS standards to calibrate the cyanmethemoglobin method.
Group 2 = Laboratories using AMSGS standards to calibrate some other method.
Group 3 = Laboratories using other standards to calibrate the cyanmethemoglobin method.
Group 4 = Laboratories using other standards to calibrate some other method.

of calibrating the instrument, selecting matched colorimeter cuvettes, and calibrating the blood diluting pipettes. The method for clinical hemoglobinometry is outlined by a description of the preparation of Drabkin's solution, and of the method for hemoglobin determination with cyanmethemoglobin.

Laboratories of the U. S. armed services may obtain the standards described from this laboratory.

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ADDENDUM: Since submission of this manuscript further experience indicates that, following the completion of step one given under the method for hemoglobin determination with cyanmethemoglobin on page 701, if the fluid is turbid because some of the red cells have not been hemolyzed, a few milligrams of powdered saponin should be added.

Medicine's Number One Problem

The practice of rehabilitation for the general practitioner, or for any doctor, begins with the belief in the basic philosophy that the doctor's responsibility does not end when the acute illness has ended or surgery has been completed; it ends only when the patient has been retrained to live and to work with what is left. This basic concept of the doctor's responsibility can be achieved only if rehabilitation is considered an integral part of medical service. Any program of rehabilitation is only as sound as the basic medical service of which it is a part. The diagnosis and prognosis must be accurate, for it is upon them that the feasibility of retraining is determined.

—HOWARD A. RUSK, M. D.
in *New England Journal of Medicine*, p. 233, Aug. 6, 1953

THE TREATMENT MILIEU

Its Importance in the Prognosis of the Schizophrenias

STANLEY E. WILLIS, *Lieutenant (MC) USN*

IN 1946, Mary Jane Ward wrote a semifictionized account of an experience in a psychiatric sanitarium under the title of *The Snake Pit*.[1] She selected her title from the following description of an ancient method for the treatment of persons with mental disorders: "Long ago they lowered the insane persons into snake pits; they thought that an experience which might drive a sane person out of his wits might send an insane person back into sanity." The author's account of the treatment received in the hospital left readers with a feeling of horror. Many of the incidents which shocked their sensibilities were understood to have resulted from institutional rigidity, empirical treatment methods, cruelty, inadequate personnel, and other related factors. On the whole, the book seemed to indicate a failure of the treatment technics which are standard in the institutional care of psychotics. If blame must be fixed, however, I believe the failure lay with the environment and the environmental attitude, or, if you will, "the milieu" in which the treatment was undertaken, and not with the technics *per se*. It is my purpose to present several concepts concerning the relationship between the treatment milieu and the prognosis of mental disorders.

I would like to ask you to re-examine whatever formulations you may have reached about institutional psychiatric treatment and the prognosis of schizophrenia in the light of several concepts concerning treatment which have been useful here on the somatic therapy service of this hospital. These concepts evolved as an attempt to explain why somatic therapy technics, such as deep insulin coma or electroconvulsive therapy, should prove efficacious in one particular setting, yet not in another. It is my belief that the reason for discrepancies in the reported rates of cures, and for the wide disagreements between various authorities concerning the ultimate prognosis of the schizophrenias by various treatment technics, becomes apparent when one examines the most tangible and basic variable of the treatment—the milieu in which the treatment is undertaken. Milieu includes not only

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the physical dimensions and facilities in which treatment is undertaken, but the attitude of the medical and nursing staff as well.

One of the areas most obviously in need of critical re-evaluation is the attitude of part of the medical profession itself toward the prognosis of that group of mental disorders which have been dumped into the nosological wastebasket and labeled "schizophrenia." It is a popular belief, even among physicians, that schizophrenia is an incurable disease which dooms its victims to ultimate deterioration and dementia. My contrary opinion reflects the belief that the prognosis of any mental disease is only what the medical profession permits it to become, and that an attitude of pessimism in a therapist is nihilistic and may lead him to neglect the patient. In the case of schizophrenia, that pessimism may imply a rejection of the patient that may materially aggravate the emotional threat which precipitated the psychotic reaction. Some of the misconceptions held by the general public as well as by many physicians about the allegedly unfavorable prognosis generally assumed for schizophrenia are caused by a failure of many practitioners to take into account and apply modern treatment methods which have evolved during the past 15 years, or to make use of the knowledge of the dynamics of psychopathology provided by modern psychobiologic or psychoanalytic research.

THE EMOTIONAL "ALARM REACTION"

I sometimes wonder if psychiatrists, even more than other physicians, do not fail to consider the fact that there is an inherent, biologically determined urge toward health which is as much a function of the mental and emotional aspects of the human organism as is the drive toward health and recuperation of the physical aspects of that organism. I sometimes wonder if our belief that a disease has a poor prognosis may not serve only to appease our need to assign treatment failures to the disease itself, rather than to admit our lack of knowledge of the disease process, or our failure to effect an understanding application of our knowledge in a manner which produces therapeutic movement. I believe that one might draw an analogy between schizophrenia and the variation in its clinical course, and the collagenous diseases and the body's response to alarm in the reticuloendothelial system, as recently publicized by Hans Selye.[2]

A comparison of the physical alarm reaction of body tissues to the onslaught of disease with the mental or emotional defense reaction of the individual to disintegrating emotional threats suggests that, as the body makes an attempt to maintain itself against sudden imbalance by homeostatic physiologic mechanisms,

the mind attempts to maintain its equilibrium and balance (that is, to preserve integration and allay anxiety) by mental homeostatic mechanisms. This concept of mental homeostasis stresses the fact that internal as well as external emotional dangers threaten the human organism and evoke an alarm reaction. In addition to threatening external circumstances, such as occur in wartime or during a general disaster, the individual may experience threats or alarms such as the eruption into awareness of socially unacceptable impulses, fear of rejection, disturbance of conscience, and ambivalence toward basic needs. These may be manifested by a feeling of alarm or anxiety. Against this anxiety, the individual may develop defenses which appear as inadequate adaptations or as psychiatric symptoms.

THE DEFENSE MECHANISM

The hallucinations, the delusions, the concretistic thinking, the erratic, disorganized behavior, the bizarre reactions, and many other examples of schizophrenic symptoms, are really nothing more than attempts by the disturbed person to maintain integration and equilibrium in the face of catastrophic anxiety. Unfortunately, these defenses are frequently out of harmony with the external environment, and only lead to further disruption and increased emotional tension. For instance, examples of behavioral defenses against anxiety are found in egocentricity and self-aggrandizement. These are generally found to be defenses against the anxiety caused by the fear of rejection. Suspiciousness is really nothing more than an exaggerated defensive alertness, an attempt to handle further slights and hurts. The aloofness and social withdrawal of the schizophrenic is another method by which he strives to obviate the possibility of further hurtful rejection.

We are indebted to the brilliant formulations of Karl Menninger,[3] who pointed out that a person's reaction to disintegrating emotional threats is to bring into place certain defenses which attempt to meet the threats. To quote Dr. Menninger, "The redistribution of energies made possible by the development of symptoms, may enable the individual to re-establish or to develop new integrative relationships of a deviant or compromised kind that provide a measure of stability and comfort. On the other hand, we know that symptoms, while adaptive in a sense that they discharge tensions perceived as threatening to the integrity of the systems, at the same time tend to increase tensions because of their disruptive effect on integrative relationships. Hence, it is apparent that an equilibrium may not be achieved, and that new and more severe symptoms may be resorted to before semistable equilibrium is achieved."

These defensive reactions may be manifested on any one of various levels of response, ranging from socially acceptable adjustments made in everyday living to pathologic mechanisms used only under extreme psychologic stress. The use of pathologic emotional defenses can be likened to the retreat under stress of a field army through the various echelons of its advance. While the use of garrison troops in lieu of field troops may not be as effective, it is better than no defense at all and may prevent annihilation until the field troops can reorganize. This can be likened biologically to the body's attempt to adapt to stress, as in Selye's alarm-reaction theory. If a stress is relentless and the adaptive mechanisms crystallize or set themselves in a pattern of reactive cellular response, the attempts at repair may interfere with the restitution to physiologic or cellular integrity, as one witnesses in the collagenous diseases. Such a process also occurs in the psychopathology of schizophrenia. The symptoms of the emotionally disordered are attempts to combat the alarm reaction of anxiety. If a threat is of disintegrating quality, quantity, or duration, the person will try to respond at the level of integrative operation he has found most effective in allaying the anxiety, and the response may crystallize at that level. The psychotic may react to threat or alarm by a retreat to a level of functioning most "safe" as tested by experience. He may resort to infantile behavior patterns, when overwhelming anxiety breaks through the defenses developed in the course of his emotional evolution. The withdrawal of the schizophrenic into unreality is qualitatively little different from the child's withdrawal into fantasy to satisfy its needs.

FAILURE OF THE DEFENSE MECHANISM

The failure of the organism structurally or functionally to respond to infection or cellular irritants is no different from the failure of the individual, in terms of reaction to disintegrative emotional threats, to meet the initial insult and to re-establish equilibrium. Just as the cellular and biochemical responses to physical insult need not remain static, neither do the emotional defenses need to crystallize, and even primitive responses may be reversed when help is given individuals in meeting the threat. Often, so-called schizophrenic symptoms are seen in a patient with acute combat fatigue. A concept of "three-day schizophrenia" grew out of experiences in World War II, where definite psychotic reactions were seen in response to severe internal and external threats. When properly handled, these patients responded by dramatic improvement. A working understanding of the causes of operational fatigue permitted rapid corrective treatment—treatment which did not aggravate the psychologic trauma underlying the disease process. This accounted for the

change in the prognosis of combat reactions. Previously, many shell-shocked veterans of World War I were treated with electric brushes for hysterically paralyzed limbs. They were kept in hospitals for years, long after the cessation of hostilities, while the well-intentioned neurologists and psychiatrists approached the treatment by attempting to prove to the patient, by stimulation with an electric brush, that they could use their hysterically paralyzed limbs. Lack of understanding of the psychodynamics of the patient's hysteria resulted in the use of a treatment that increased the psychologic trauma to the patient.

MODERN PSYCHODYNAMIC KNOWLEDGE

By using knowledge of emotional psychopathology gained by psychoanalytic research, we can analyze and understand all of the patient's symptoms and his behavior. Any pattern of abnormal behavior should stimulate our interest as to just what it is that the patient is trying to do. Not only is it vitally important that the psychiatrist know the full implications of the patient's behavior, but it is equally as important that some measure of understanding of human psychopathology and behavior be passed along to nurses, corpsmen, and the personnel of the other ancillary services. To accomplish this, corpsmen were selected at this hospital for a four-month course of instruction as neuropsychiatric technicians. In this course, modern psychiatric nursing, personality development, group activity therapy leadership, and a didactic course of description of the various psychiatric disorders are intensively taught. This, and regular weekly staff meetings for each ward, have proved to be valuable steps in the building of a therapeutic milieu. It is to the milieu that we assign our improved results in the treatment of the schizophrenic.

If a schizophrenic is treated early and promptly by considerate methods, in a milieu where the threats to the already weakened and oversensitive ego are minimized or absent—in a milieu which may even initiate something of an emotional growth process—then the need for pathologic defenses are minimized and the possibility that those defensive reactions will crystallize into established irreversible patterns is greatly decreased. In such instances the chance for restitution to emotional integrity is good. It is unfortunate that all too often the hospitalization, the psychiatric examination, and the attitude of attendants and nurses may aggravate the emotional trauma. On the contrary, if all the members of the treatment team are made aware that the patient's behavior is symptomatic, then how different is their attitude toward the patient and how much more meaningful the hospitalization becomes. The patient is in a milieu of acceptance and understanding at all times, not just during the single hour he spends with the doctor two or three times weekly. A non-

judgmental, noncondemning attitude, a feeling of human tolerance, and a conviction that the patient's symptoms and his behavior are needed defenses and not undertaken solely to provoke others permit the staff member to develop a healthy attitude toward the patient free of the attitude of contempt, and the desire to punish. A tolerant, permissive attitude, however, is not the only ingredient which is necessary. As Levine[4] stated, "The tolerant attitude must be combined with a varying amount of firmness, of an expectation of better judgment, and of setting limits in a friendly way to the acting out of unacceptable defenses. A certain amount of such firmness must be pervasive in the therapeutic attitude." Absolute firmness and calm is necessary in the presence of catastrophic anxiety or in cases of panic, or when there is actual danger to the patient or others. A patient afraid of his own ability to control his unacceptable defenses may require great firmness, as an essential aspect of the milieu. Perhaps this is best summed up by the statement that, although we limit the patient in a therapeutic milieu we believe that we are limiting with hope and concern rather than with pragmatism. Our problem is one of transmitting to the patient the assurance that strong, experienced, and mature adults are now attempting to help him solve some of the problems which have led to his anxiety, and that the treatment team, including corpsmen, nurses, social workers, and psychologists, all believe that the patient is capable of learning how to meet his conflicts with increasing confidence and adequacy. To this end, much of the process of aiding the reintegration of the patient is educative and designed to develop adequate, integrated defenses.

METHODS OF CREATING A FAVORABLE MILIEU

I believe that we have a program that has demonstrated the effectiveness of milieu. We are getting satisfactory remissions faster since the concept of the therapeutic effect of milieu has been accepted by the staff. We have demonstrated that a somatic treatment service in an institutional or residential psychiatric center does not have to be a "snake pit" when the emphasis is laid on understanding the patient as an ordinary human being who has reacted to a severe and disintegrating psychologic threat by a disordered mental mechanism and who can and will recover if we are patient and skillful enough. We find a place for deep insulin coma, for electroshock, and hydrotherapy, but not as the only ingredients in our therapy recipe. These are used as one phase of a program and prescribed if the patient is inaccessible to some other form of therapy. In addition to these widely used technics, a dynamic approach to the patient is included in a program of interview psychotherapy, both directive and nondirective, in group psychotherapy, both expressive and didactic, in activity

and recreational therapy, in occupational therapy, in vocational rehabilitation and, last but not least, in careful social programing.

Patients are encouraged to socialize, to communicate, to work and play together, and to draw on the experiences provided by the interaction of the group for lessons in emotional maturity and social adequacy. Staff and patients interact not only on the ward but at picnics, restaurants, theater entertainments, and special tours. Many of these activities and recreations are the very ones often used to keep morale high in a nonpsychotic group. Despite the lack of custody and restraint, we have not had a single, serious untoward incident.

EFFECTS OF THE FAVORABLE MILIEU

Someone might ask: "But doesn't this take a long time?" I believe that we have had restitution to emotional integrity in a very large number of our patients; more than 90 percent are well enough to return home within six months. This is a relatively short time when one considers the hopelessness felt on committing a psychotic to a state hospital and declaring him legally incompetent, often for a lifetime. To the question asked: "But did you cure him?", I would like to ask a question in return. "Is not a cure in physical medicine dependent on the return to cellular and physiologic integrity? Does not the permanence of that cure prove to be a function of the person's degree of resistance to infection or trauma?"

Often, an overwhelming infection may disrupt even average immune responses. So it is in the case of the emotional disorders; an overwhelming disintegrative threat may disrupt the defenses of a relatively normal person. I would like to submit that, though many of our patients have had a psychotic experience, they may be in better shape in terms of self-understanding, emotional integration, and frustration tolerance after they have recovered than are many of the compensated psychotics, severe neurotics, or the just plain unhappy people who will never get into a mental hospital. Their adjustment would be even better if the community looked for their assets rather than being panicked by their possible liabilities. Except for a blending of the milieu, dynamic psychotherapy and somatic therapy applied with proper timing, many of the patients who leave this hospital in good mental status might have become state of federal hospital inmates. The earlier we recognize schizophrenia, the less likely will the patient resort to crystallized pathologic defense reactions with chronic disruptive effect on his integrative relationships.

VALUE OF THE FAVORABLE MILIEU

One of the aims of modern psychotherapy is to help the patient learn how to remove blocks to his inherent impulse to grow toward maturity and adequacy. Growth in maturity can only occur through emotional experiences and growth in adequacy through an educative social experience. The psychiatric hospital which places its emphasis on custody cannot provide these emotional or social experiences. I believe that both opportunities must be provided for the psychiatric patient in a community matrix, if a permanent result is to be achieved. A cure, from a psychiatric point of view, can be defined as an end result of treatment, where the patient's inherent impulse toward growth in maturity and adequacy is started. The reorganization and reintegration of the personality in a total sense must be facilitated. This phrase "total sense" includes the dimension of current experience, as well as the opportunity for working through or re-experiencing those past experiences that have determined the patient's present emotional status. Most modern psychotherapists are aware that successful treatment in a patient often results from the "working through" or re-experiencing of past experiences, but sometimes we are inclined to forget that therapeutic change also results from current experiences as well. These, because of the pervasiveness of the emotional effect, change the relationship of other current experiences to each other and somehow mitigate the adverse effect of previous experiences on the organization of current living. A therapeutic impact, able to mitigate the pathologic effect of past experiences, is no more likely to occur in an atmosphere of custodial care, punitiveness, lack of respect, and suspicion than it is in a snake pit.

Psychiatric treatment and management during the past 10 years has become less of a speculative mystical process wherein a cure was a matter of chance. It is based more on understanding of the disease process provided by the psychoanalytic theory of personality development. The psychoanalytic method may or may not be applicable in every case, but from the psychoanalytic theory we can find a clue to the patient's behavior that will help us provide a corrective emotional experience instead of stumbling blindly along the path of empiricism, absolving ourselves from blame by sagely commenting about the poor prognosis of the disease. Therapy is possible in schizophrenia. It should aim at the resocialization of the emotionally disturbed individual into an integrated, productive, adequate person, capable of expressing his feelings and of satisfying his deep emotional needs without sacrifice of his fundamental personal gratifications for conformity to external social pressure. To learn to live with one another, working and loving without becoming immobilized in fears, hates, or competitiveness is difficult enough even in a

normal environment. For the schizophrenic it requires that we skillfully structure a milieu conducive to recovery.

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GREEK OFFICERS VISIT USN HOSPITAL

Front row, left to right: Comdr. George Maralis, RHN; Capt. Nicolos Vourekos, RHN; Capt. I. L. V. Norman (MC) USN; Capt. John Kondghiannis, RHN. Rear row: Lt. George Ghiachnis, MC, RHN; Comdr. Morios Stauridr, RHN; Lt. Evanghelos Belanios, MC, RHN; and Capt. M. M. Rubin (MC) USN.

A group of high-ranking Greek officers of the Royal Hellenic Navy, headed by Captain Nicolos Vourekos, Commander of Submarines, and Captain John Kondghiannis, Chief of Staff of the Training Establishment, recently visited the U. S. Naval Hospital at Great Lakes, Ill., which is commanded by Captain I. L. V. Norman (MC) USN. This large naval medical facility in the past few months was also visited by Under Secretary of the Navy Thomas S. Gates and delegations of officers of the Royal Norwegian Navy and the Columbian Navy.

ELECTIVE SURGERY IN THE FIELD

FRANK B. BERRY, M.D.
Assistant Secretary of Defense
(Health and Medical)

THE word *elective* comes from the Latin verb *eligere,* past participle *electus.* Let us not confuse *elective* with *electitious* which means arbitrarily chosen. Several definitions of *elective* are given in the unabridged edition of the Oxford dictionary. These are under three main headings; it is the second heading which concerns us. The major definition here is "pertaining to choice in general," and two subheadings apply directly to the problem of elective surgery—"(4) proceeding from free choice, optional; (5) preferentially selected according to circumstances (obs. rare): 1643 T. Goodwin, *Child of Light:* there are to be peculiar elective plaisters to treat these wounds, because these wounds are often differing."

In peace and during lulls in battle activity in war, the problem of elective surgery always arises. I believe the term *elective* should be interpreted along two different lines and the more parallel is their course, the firmer are the indications. First, is the surgery good for the man? Second, is it in the best interest of the service, and is it justified by any given tactical situation? I do not think anyone will question the wisdom of tonsillectomies, repair of hernias, appendicectomies when necessary for honestly considered recurrent attacks of appendicitis, circumcisions, and ligation or excision of varicose veins, hemorrhoidectomies, and surgery for fissures and simple fistulas. These are all procedures which will add to the health, morale and maintenance of strength of forces in the field. In many instances they are not only elective but also indicated. Any medical officer who has been in the field during prolonged campaigns has seen many soldiers troubled with nonspecific balanitis and anterior urethritis caused by dirt and lack of opportunity for local hygiene. Field conditions likewise frequently act as continuing factors in troublesome hemorrhoids and fissures leading to fistulas and ischiorectal abscesses if neglected. Continuance of varicose veins, if at all severe, may well lead to fatigue, local swelling, or ulceration from trauma.

In the midst of the North African Campaign, when every man was needed, I once resected a cecum and lower ileum at the request of a lieutenant colonel in the First Armored Division.

This operation was necessitated because of recurring attacks of mild intestinal obstruction necessitating several readmissions to the Ninth Evacuation hospital. A roentgenogram showed deformity about the cecum probably due to a previous appendicectomy and we believed this could be corrected. The operation was done through the old McBurney incision with Weir extension. A localized occluding angulation of the ileum and a small granuloma were found because in the previous operation the stump of the appendix had been ligated with silk and then buried; hence the necessary local resection. This surgery was successful both from the patient's standpoint and also from the fact that this valuable officer was returned directly to his division.

As regards operations for cervical disk and removal of menisci from the knee, neither of these procedures should be lightly undertaken and I think it is safe to say that much harm has been done by too wide an extension of the limits of this type of surgery, together with improper selection of the time and place. Such patients should always be referred to a base or general hospital for proper evaluation and study.

Surgery is a precise method of treatment and includes more than the operative technic itself. Preoperative care and decision, the operation and postoperative treatment all go to comprise "surgery." It should never be done merely for the desire to operate. On the other hand surgery should not be postponed when one is sure that the patient can be helped, especially with the added indications that the service itself and the morale of the patient and his unit may be improved by caring for him locally. It has been suggested by some that "elective" surgery should be postponed until the man is returned to civil life, with the thought possibly that he might then report to a doctor as a private patient. This idea needs comment only to condemn it thoroughly.

The good of the patient must always be considered first. His physical and mental well-being, his morale and motivation to continue as a member of his unit will settle this question. Finally, this question must be answered, "Is this the time and place, and can we conserve manpower by this elective surgery?"

Since the second century A. D., when Galen postulated the doctrine of temperament, it had seemed reasonable to suppose that the traits, habits, characteristics, even the attitudes and values displayed by man, were intimately related to his physiology. Hence the facile conclusion: To alter physiology is to alter psychology.

—FRANCIS J. BRACELAND
in *Bulletin of the New York Academy of Medicine*, p. 765, Oct. 1953

IS MILITARY MEDICINE A WORTH WHILE CAREER?

M. S. WHITE, *Brigadier General, USAF (MC)*

TODAY, upon the completion of another period of instruction in your professional careers, the question uppermost in each of your minds is, "Where do I go from here?". Will the next 18 months be a period that contributes to your professional advancement, or will it be a period of professional stagnation, which some of you may consider necessary because of your citizen's duty to maintain the strength of your nation in these troubled times? The answer will depend on you. We all know you only get as much out of anything as you put into it. Medical and dental educations are not served on silver platters. Your continued progress in the fields of medicine and dentistry will depend on diligent study and a determination to profit from the experiences offered you.

The trait that can probably be of most help to you in profiting from your military service is that of adaptability. The ability to adapt yourself, regardless of assignment, will permit the most to be gained from all experiences and observations. The broadening contacts you will have with all types of problems and people—with representatives of every walk of life and from diverse regions of the nation—will contribute to your continuing education, which in our professions never ends.

VALUES OF MILITARY TRAINING

Too frequently we are not aware of the value of this training at the time we receive it. Illustrating this is a letter I received recently from a young medical officer who entered the service completely inexperienced and was thrust into an assignment as a preventive medicine officer without the benefit of the indoctrination course such as you have completed. He has now returned to civilian practice because of family ties which prohibited his embarking on a regular service career—a career which appealed to him. He wrote as follows: "The 20 months of service, in retro-

From Headquarters, Tactical Air Command, Langley Air Force Base, Va.

Presented at graduation exercises of officer indoctrination class at Gunter Branch, U. S. Air Force School of Aviation Medicine, Gunter Air Force Base, Ala., on 15 August 1953.

spect seemingly a few days, have offered this embyro physician an enriching experience that I find difficult to evaluate justly. While the staff has been most generous in its appraisal of my efforts, there is no disputing the fact that I have gained far more than I have given. Preventive medicine as a separate specialty, it is true, has never been my principal professional avocation. The personal advancement I was afforded during my Air Force assignment in that field, however, daily compensated for my lack of desired clinical responsibilities. That advancement in maturity and broadening in social and professional scope which I believe have been my over-abundant reward can, in the main, be ascribed to my association with the service."

One of the fortunate experiences all of you are to have in some degree is that offered by the rapidly developing field of aviation. The progress of civil air transportation is rapidly making flight acceptable to ever-increasing numbers of our population, which means that our medical and dental professions must orient themselves to the problems their patients will meet in air travel. Your opportunity to practice either directly in the field of aviation medicine or in other related branches of medicine and dentistry should pay dividends in your future military or civilian pursuits. I enjoin you to profit by your experiences and learn all you can of the flight-line activities in the units to which you are assigned. Learn what airpower is and what its potentialities are. As future leaders of your communities, you will find it impossible to take a passive view of your civic responsibilities, and knowledge of the military service will aid you in meeting these responsibilities.

THE SERVICE AS A CAREER

Some of you may decide that you would like to continue in a military career. That is a question that must be answered individually after a careful weighing of all the factors involved, and of all the advantages and disadvantages of such a choice. The service can stand on its own merits. The advantages and disadvantages must be evaluated by each person, and the decision to select the service as a career rests solely with him. To a certain extent, the advantages and disadvantages of any career depend on the personality of the individual. There are certain persons who wish to plant their roots in one community and remain there for the rest of their lives. These people would be very unhappy in the service, and I would recommend that they do not consider it. In my opinion, this is the only disadvantage of the service, and it is a disadvantage only to the type of person described. To others, travel—the opportunity to meet new people, to see new places, and to experience new adventures—is one of the distinct advantages of the service as a career.

When properly evaluated, all other aspects of service life are found to possess marked advantages over civilian life. Frequent criticisms directed against service life are made by the uninitiated or by those who make up our services in time of war. In wartime everyone's life is disrupted, so an improper comparison is made. Much of this criticism has been directed at such aspects as pay, home life and family, professional advancement, insecurity, and frequent moves. Actually the honest analysis of these criticisms will reveal that most are in error, and are leveled against aspects which in reality are desirable features of service life.

SOME CRITICISMS REFUTED

In regard to pay, it compares very favorably with civilian remuneration when increases through the various grades and over the years are considered. No part of military pay need be expended on the additional items which are a constant drain on the incomes of civilian physicians. I find that I live better and have an income greater than most of my classmates of medical school of 22 years ago, and this is in spite of the fact that when we entered the service we selected a military career because of its way of life, not because of any monetary return. All officers in those days expected to live in so-called genteel poverty, but still to live constructively and happily, dedicated to the services of their country.

The ill-informed person frequently criticizes the type of home life in the service and the difficulty of rearing a family. In normal times the service offers ideal conditions for home life because each base is a small-town family of well-selected members. It must be remembered that in wartime frequent moves and lack of housing were not experienced by service personnel alone. Prewar standards, when attained again in the future, will undoubtedly provide housing similar to that available to career service personnel in the prewar years.

Rearing children in the service is one of the real rewards of military life. Service children usually are more mature, more precocious, and better and more broadly educated than their civilian contemporaries. The advantages of travel and the broadening influence of contact with all types and races of people prepare them better for life.

Professional advancement and practice, which is frequently criticized in the service, is one's own responsibility. Opportunities exist to go as far as he desires if he exercises a diligent and aggressive approach to training. Along with many others in the services, I have been given the opportunity to progress in medicine to and beyond the stage of certification by the American

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Boards of Internal Medicine and Preventive Medicine. When formal training courses are taken, whether for one week, three months, or three years, the service officer still retains his normal income and need not worry about losing his patients or his practice during the period of his absence. Few civilian practitioners can afford to break their professional ties in order to continue their postgraduate education. In the Air Force, those entering the specialized field of aviation medicine will have the stimulating experience of pioneering in a new frontier of science, while all the services provide ideal environments for other research activities.

Frequent moves, often criticized, were a result of wartime expediencies and emergencies which affected everyone's life. Normal military service, such as we hope to expect in the future, will mean moves, other than those desired by the individual himself for training or other purposes, about every three or four years.

Recently, criticism arose because of an officer's inability to resign his commission. In the past one could resign at any time, but during the wartime emergency this naturally was discontinued. The Assistant Secretary of Defense (Health and Medical) has announced his intention to support a policy which would permit resignations of medical service officers from the regular service. This will again permit development of a voluntary medical career corps appreciative of what it has, and which, in turn, will be a well-selected group.

PROFESSIONAL AND ECONOMIC INDUCEMENTS

We never hear criticism or discussion of the other advantageous factors of the service: the appeal to the spirit of adventure; a happy, contented, stimulating, healthy, highly motivated and productive way of life; or the satisfactions attending a professional practice free of the many irksome disadvantages met with in civilian life. During vacations and off-duty time an officer is free of all cares of practice. These are usually not discussed, but are certainly important in an over-all evaluation for selecting a career. For those who are security minded and who actually wish to weigh the dollars-and-cents value of the service sickness and retirement benefits can be mentioned. But everything else so outweighs the conditions of civilian life and practice that it seems superfluous to topple the scales in this manner. The security benefits are illustrated in the story told me by a young dentist leaving the service last month, who said that if his wife had approved he would have applied for a regular commission, as he loved the service and the manner in which it allowed him to practice his profession. But his principal

reason for staying, figured out by himself and another dental financial genius, was the amount of work they would have to do at a dental chair each week in private practice until retirement to build up an annuity equivalent to what they would get out of military retirement. They found that there were not enough hours in the day to do this, and knew that in the future they would longingly look back to military service.

MILITARY SERVICE AND FAMILY LIFE

This brings up the question of demonstrating to the wives of our professional people the advantages of the service. Too frequently their only experience of service life is of poor living conditions in a crowded community, away from a base and the normal associations of service life. If they realized this was only a temporary situation, overcome in the long-range picture of a service career, and were aware of the advantages of model communities, good home life, lifelong friendships, good schooling for their children, and the regular companionship of their husbands, they would probably quickly insist that their husbands apply.

There are many other so-called "fringe benefits" we hear about these days and, though important, they do not merit discussion here. Moreover, in the long-range career picture I am sure an appreciative citizenry and government, which it is our lot to serve, will take the necessary steps to restore these rights and privileges and to advance further the prestige of service life.

AN INDIVIDUAL CHOICE

Each of you must determine what you want out of life and how you can best live it, at the same time making full application of your talents to contribute to the general welfare of the nation and humanity. Those who believe they can meet the rigid requirements of the regular service, and who are accepted by the service as suitable, will find that they have chosen a rewarding way of life. In the long run, I am sure it will make them the envy of all their colleagues who are bound down by civilian pursuits. The choice rests with each of you after carefully weighing all factors.

I wish you all Godspeed in your separate journeys to your stations, and trust your period of service will be one that you can always pleasantly look back upon as a further step in your professional advancement, unmarred by another war. But uppermost in our minds must be the knowledge that the services exist for only one function—the protection of the nation in the event of war.

In closing, I can think of no better guide to be used both in military and in civilian careers than the motto which stands over the threshold of the United States Military Academy at West Point, and which has served to guide the regular corps through their careers in war or peace. That motto is: "Duty, Honor, Country." "Duty—well done; honor—in all things; country—above self."

PUSAN HOSPITAL ADMITS 100,000th PATIENT

Left to right: 1st Lt. Josephine White, ANC, USA, Corporal Michael Kost, and Colonel O. R. Jensen, MC, USA

The U. S. Army 21st Station Hospital at Pusan, Korea, recently admitted the 100,000th patient since its activation in September 1950. The patient was Corporal Michael Kost of St. Benedict, Pa., who is assigned to the 335th Ordnance Battalion. The hospital has received official commendations from the governments of the United States and the Republic of Korea for its part in the treatment and evacuation of thousands of combat casualties. The present commanding officer is Colonel O. R. Jensen.

DENTAL APPOINTMENT PROBLEMS AT SEA

FRANK N. ELLIS, *Lieutenant (DC) USN*

FROM the day he reports until he is relieved, the dental officer on independent duty aboard ship will have one persistent, ever-present problem—how to distribute his talents in such a way that each of those requiring his services will receive a fair allotment of time for dental care. On a ship with the complement of a cruiser this is a complicated problem, because usually, for every man who can possibly be squeezed into the schedule, there are several in need of treatment. Sometimes it takes the wisdom of a Solomon to decide how the dental officer's time should best be used.

AVAILABLE METHODS

The keystone of any plan for allocating dental time is in the method of making appointments. Since reporting aboard ship for duty two years ago, I have tried or personally observed the following methods of making appointments:

1. Appointments are made for one day at a time only. All persons desiring treatment report to the dental office after morning quarters, when the dental officer selects those he can treat on that day. All others are ordered to return to sick call again the following day.

2. All the men on the ship are given a dental examination, and patients are called in on the basis of need.

3. All patients reporting to dental sick call in the morning are given appointments, even though this may result in booking ahead three to four months.

4. All men seeking treatment are required to report between the hours of 0800 and 0900, at which time a working dental record is made and the permanent record is brought up to date. Any condition requiring emergency care, is treated immediately or later the same day. If follow-up treatment is indicated, an appointment is made within a 10-day period. If dental care can safely be postponed, the patient is advised to report again in 30 days, at which time he will be given an appointment no more than one week in advance.

From U. S. S. *Quincy*, FPO, San Francisco, Calif.

INADEQUATE METHODS

As well as being wasteful, the first of these four methods is unfair because those with time to squander standing in line are given an advantage over those who, though equally deserving, are busier. I have seen this method used, and although it may answer the problem of booking patients too far in advance, it does not provide a balanced dental service for all hands aboard ship.

Theoretically, the second method should be the ideal one, and if a dentist were to be sent to sea with 400 to 600 men I think it might also be the practical solution. On a cruiser with only one dentist assigned, however, the problem consists of providing dental care for from 1,400 to 1,600 men, many of whom have long-standing dental deficiencies. If one also considers the fact that this crew of 1,400 men is not static but constantly changing, and that the new men reporting aboard will provide a constant flow of additional patients, it can readily be seen that the mechanics of examination and of making and cataloging working records alone will occupy a great deal of one dental officer's time. Emergency treatments, which cannot be postponed, will take two working hours a day, and these patients must be provided with follow-up appointments.

The third method, apparently providing equitable care for all, does nothing of the kind in actual practice. I found in my attempts to use this method that soon I was booking as much as three months ahead. This system results in impossible situations, as there is no way of knowing the ship's operating schedule so far in advance. Because no provision can be made for adjusting the schedule in the event of early liberty for the crew in foreign ports, general quarters, field days, special inspections, rough seas, et cetera, the appointment list soon becomes meaningless. Most dental appointments made this far in advance are probably forgotten anyway.

THE METHOD OF CHOICE

The fourth method, and the one at which I finally arrived by a process of trial and error, is a compromise with the others. It has the advantage of providing dental time for those persons in need of urgent treatment and also of giving a reasonable number of appointments to others requiring routine work.

All men reporting aboard ship either bring with them an up-to-date permanent dental record, or one is made for them immediately before the dental administrative assistant signs their "check-in" sheet. Working records are provided at the time men report to sick call, either for emergencies or to request dental appointments. At this point the dental officer may give appointments to men with the most urgent dental needs. If the appointment list grows short,

however, it is possible to add the names of men who need only routine care. If the workload of urgent care is too heavy, the man with routine needs is asked to return in 30 days when every effort will be made to provide him with his next appointment within a week.

I have found that in practice this method yields the most satisfying results. Urgent cases are cared for within a short time; routine cases are projected over a longer time span, but, although delayed, are eventually completed. Our books are not cluttered with a hopeless maze of appointments stretching into the dim future, and our sick-call line is moderate. Best of all, each man is given the feeling that he is receiving his share of the best dental care the ship can afford.

SUMMARY

Although no method of providing dental care will work perfectly in a situation where the dental workload is excessive, it has been found that by careful attention to the method of making appointments a great many evils may be avoided and reasonably adequate care can be provided for all hands. The method selected allows the dental officer to concentrate on personnel in need of urgent dental care, and to spend the remainder of his available time on routine work. The appointment list should not extend into the future for more than two weeks.

Health and the Individual

Before I know what is health in a person, I should like to know what goes to make up his totality. Is the poetry of Keats as much a part of him as were his lungs? Are the intelligence, character, and personality as much a part of a man as his limbs? If by losing the power in his limbs he gains in those other qualities, has there been a total loss or gain in health? Sir Owen Dixon in his Arthur C. Mills Oration quoted Wendell Wilkie to the effect that the qualities which the late President Roosevelt's misfortune had called forth, and the conditions of life that it imposed, had indeed been a source of strength—they had contributed to the President's success. Which, then, was the healthy Roosevelt? The man who could walk, or the man in the wheel chair with his mental powers enhanced by his paralysis?

—W. J. SAXTON
in *Medical Journal of Australia,*
p. 558, Oct. 10, 1953

"SAMARITAN" IS FIRST AIRCRAFT DESIGNED EXCLUSIVELY FOR EVACUATION OF PATIENTS

The Military Air Transport Service has accepted delivery of the first of a fleet of 26 new C-131A aircraft which have been built for the exclusive use of patient air evacuation. Known as the Samaritan, the plane is a special version of the twin-engine Convair currently used by commercial air lines.

Shown inspecting equipment aboard the new C-131A are Brig. Gen. Wilford F. Hall, USAF (MC), left, Surgeon of MATS, and Captain Robert F. Carmody (MC) USN, Deputy Surgeon.

The new evacuation aircraft is pressurized and air-conditioned in flight. It has a cruising speed of 235 miles per hour, a service ceiling of 24,000 feet, and a range of over 1,600 miles. Passenger seats face aft and are stressed to withstand a force of 9 g. Special features include a buffet with refrigeration for preparation of meals aloft, a flight nurse's desk, glare-proof windows, modern communications system, and a new type nylon litter strap. The C-131A carries two pilots, a flight nurse, and two medical attendants in addition to 27 patients in litters, or 12 patients in litters and 20 seated.

Giant Follicular Lymphoma

PAUL O. WELLS, *Colonel, MC, USA*

THE following case of giant follicular lymphoma of 22 years' duration, with biopsy evidence of its presence for 13 years, is reported because of the long survival of the patient following onset of the disease. A review of the literature discloses other reports[1,2] of long survival.

CASE REPORT

The patient was a 65-year-old woman who was admitted to this hospital on 11 March 1952 because of abdominal pain and shortness of breath. In 1929 she had enlarged cervical and left inguinal lymph nodes for which she received x-ray therapy with prompt regression of the nodes. In October 1931 she had bilateral recurrence of enlarged nodes in the cervical and inguinal regions. The mediastinal nodes were also slightly enlarged. The clinical diagnosis at this time was lymphoma. She was given x-ray therapy to the left inguinal region (about 3,000 r (tumor dose) in 13 months). The mediastinum and cervical region received a much smaller total dosage and prompt regression of the lymph node enlargement occurred. The patient was then asymptomatic until February 1939, when a small (1.5- by 2-cm.) mass was noted in the region of the right parotid gland. This was excised and histologic examination revealed a lymph node showing changes characteristic of nodular lymphocytoma (Brill-Symmers disease) (fig. 1). Postoperative irradiation was given to the operative site.

In 1940 the patient was again treated as an outpatient for lymph node enlargement in the left inguinal region, and this promptly regressed after small doses of roentgen rays. During the subsequent years, the patient had numerous recurrences involving isolated or small groups of lymph nodes which responded promptly to small doses of roentgen rays.

In January 1948 a rectal polyp was removed and on histologic examination showed adenocarcinoma. Exploratory laparotomy at that time did not reveal any residual rectal lesions, but there were numerous small, gray nodules in the liver and spleen, varying in size up to 2 cm. in diameter. A biopsy of one of the

From Letterman Army Hospital, San Francisco, Calif.

liver nodules contained the regular architecture of the liver disrupted by masses of giant lymph follicles (fig. 2). The diagnosis at this time was aleukemic nodular lymphocytoma, metastatic to the liver. A dermoid cyst of the ovary was also removed. Postoperative irradiation (a total dose of 1,125 r (air)) was given to two adjacent upper abdominal areas over a 90-day period.

From June 1949 to August 1951 the patient was periodically treated with small doses of irradiation for enlarged, discrete

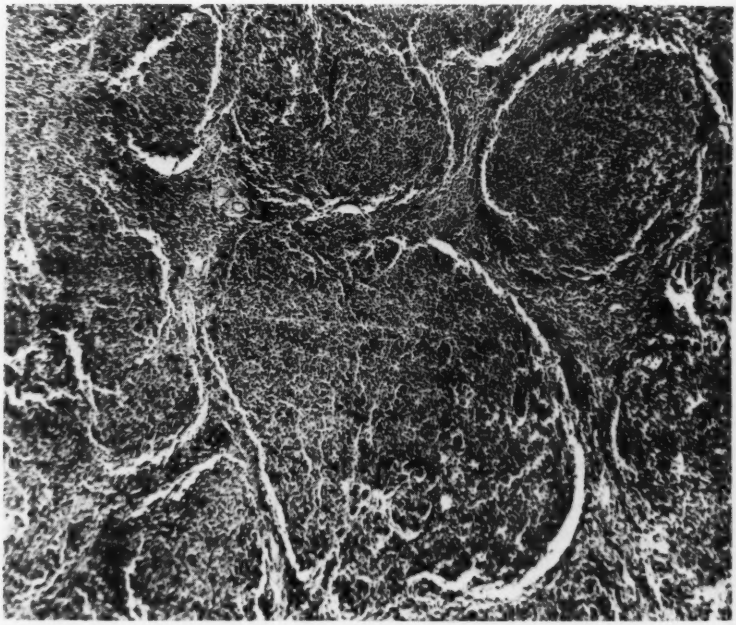

Figure 1. Lymph node biopsy (1939): Section showing huge follicles distorting the normal architecture of the node. (× 70)

nodes about the face and neck, which promptly shrank in size. Throughout this time her general physical condition remained good.

In January 1952 her condition changed, with rapid enlargement of the supraclavicular, left inguinal and anterior mediastinal nodes, and a small pleural effusion on the left. The liver and spleen were considerably enlarged. Biopsy of a cervical node at that time revealed malignant lymphoma. Irradiation of the involved areas again gave a prompt response with regression of the nodes and resorption of the pleural effusion but there was a

rapid recurrence of the node enlargement and the patient's condition declined rapidly.

On her last admission to the hospital, the patient complained of increasingly severe abdominal pain, anorexia, and dyspnea. Breath sounds were decreased to absent over the lower third of the left lung field. Her abdomen was distended and diffusely

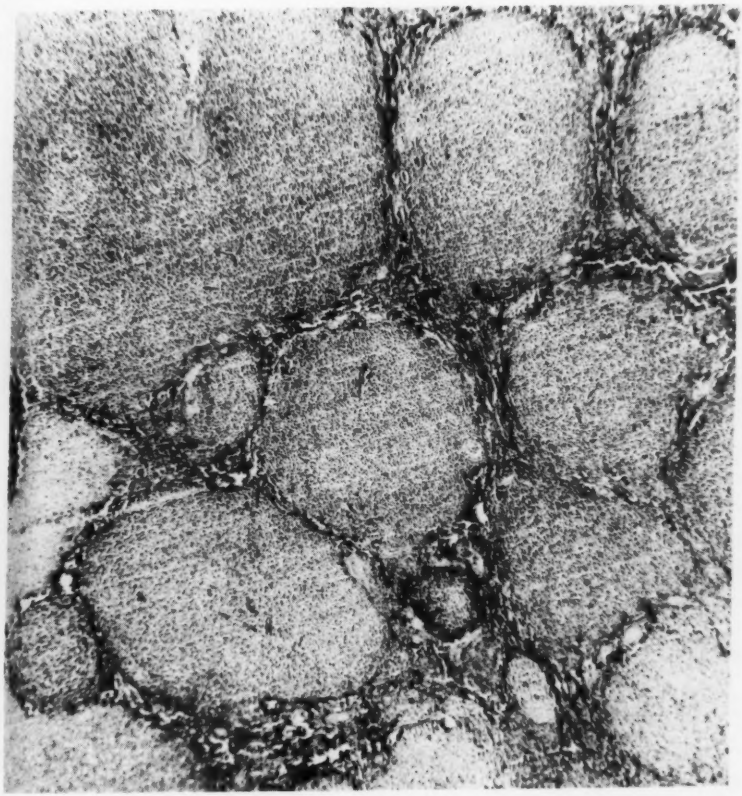

Figure 2. Liver nodule biopsy (1948): Section showing marked disruption of the liver architecture by giant lymph follicles. (× 35)

tender. The liver was palpable 7 cm. below the left costal margin and was irregular and nodular. There was generalized anterior cervical and submandibular adenopathy, and the left supraclavicular nodes were markedly enlarged. The peripheral blood showed only a mild hypochromic anemia. A roentgenogram of the chest showed a large pleural effusion on the left and markedly enlarged mediastinal nodes. There was progressive deterioration

in her condition. A course of triethylenemelamine failed to benefit her, and on 28 March, 17 days after admission, she had a large hemetemesis, and died the following day.

At autopsy the most significant gross findings were generalized lymphosarcomatosis, bilateral pleural effusion, acute gastric ulcer, and hydronephrosis with hydroureter on the left

Figure 3. Spleen at autopsy showing extensive nodular tumor involvement.

side, secondary to obstruction of the ureter by a lymphosarcomatous mass in the pelvis. The spleen, in particular, showed numerous large white tumor nodules (fig. 3). The liver, kidneys (fig. 4), and pancreas were extensively involved and histologically were identical with the malignant lymphoma in the lymph nodes. The intestinal tract was extensively infiltrated with

Figure 4. The kidney at autopsy showing tumor nodules.

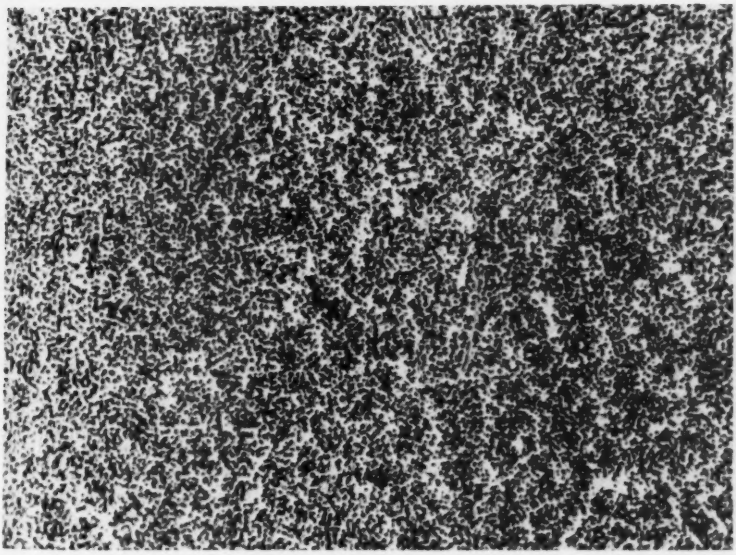

Figure 5. Section from lymph node removed at autopsy showing complete destruction of the normal node structures and replacement with a pleomorphic aggregate of malignant lymphoma cells. (× 150)

tumor tissue, but was not obstructed. The brain and lungs were free of tumor involvement. Bone marrow taken from the lumbar vertebrae and ribs showed hypoplastic marrow, but no lymphoma infiltrate. The following is quoted from the autopsy report: "Microscopically, the neoplasm presented the monotonous pattern of a lymphosarcoma, portraying no resemblance to the typical giant follicular tumor observed at previous biopsy. Variation in lymphoma cells and nuclei is moderate: many cells appear to be mature lymphocytes, and there are large numbers of indented and convoluted nuclei. The neoplasm is considered to be a lymphosarcoma and, with the predominance of well-defined vesicular nuclei, numerous mitoses, and an occasional nucleolus, to satisfy the description of lymphoblastoma" (fig. 5).

DISCUSSION

This disease is generally considered to be a member of the lymphoma-lymphosarcoma group.[1,3,4] The essential pathologic change is "markedly enlarged follicles, packed uniformly with lymphocytes or their precursors, or, rarely, reticulum cells."[4] The marked radiosensitivity of the lesions is shown in this patient, where tumor doses as low as 200 to 300 r were sufficient to cause regression of lesions. Even after the lesions had changed into a more malignant form there was prompt regression of the enlarged nodes after small doses of irradiation although they recurred within a few days. Rubenfeld[5] calls attention to the fact that larger doses (2,000-3,000 r) are required in treating the "polymorphous cell sarcoma" which develops from the giant follicular lymphoma. He also noted a latent period of from two to six months before they responded to the treatment. His five-year survival rate in the two conditions was 60 percent and 66 percent, respectively. The reported incidence of this disease varies with different authors. Gall and Mallory's[3] series of 618 cases of lymphoma included 42 patients with "follicular lymphoma." Ehrlich[6] quoted Custer as stating that there were 110 cases of giant follicular lymphoblastoma in 1,190 cases of malignant lymphoma examined at the Armed Forces Institute of Pathology between December 1941 and 2 September 1945; an incidence of 9.2 percent.

This patient illustrates the usual relatively benign course of the disease, until such time as it changes to a more malignant form. Cohen and Bergstrom[7] assert that "giant follicular lymphadenopathy may show regression to normal, intermittent recurrence, or change to any of the following: Giant follicle lymphoblastoma, lymphosarcoma, lymphatic leukemia, Hodgkin's disease, polymorphous cell sarcoma, or reticulum cell sarcoma." On the other hand, Gall and associates[3] report 63 cases of this disease, of which only one changed to another member of the

lymphoma group, lymphoblastic lymphoma. However, the cases in their series are divided into four types on the basis of histologic appearance. Extensive deformity of the follicles with considerable atypicality and dedifferentiation of the cells placed the lesions in type 4. Transition from one type to a more advanced type was commonly noted by them. Symmers[9] also noted that giant follicular lymphadenopathy may undergo transformation into a form of generalized sarcoma of lymph nodes. Uhlmann[10] called attention to the frequency of confused terminology on histologic reports. Several cases in his series had been previously diagnosed as "atypical sarcoma," "atypical Hodgkin's disease," or "aleukemic leukemia." The disease entity has now become so well known that this should be uncommon in the future, but confusion in terminology used in classifying the various disease entities involving lymph nodes still exists.

Prognosis in patients with giant follicular lymphoma is significantly better than it is in patients with other diseases of the lymphoma group. Over 50 percent of the patients can be expected to live over five years after diagnosis is made.[3-5] Permanent cure is rare with the present methods of treatment.

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Hysterectomy is a procedure that should never be undertaken lightly or inadvisedly. It should be done only when one is certain that no simpler method of relief is possible and the end results justify its performance. By following these basic principles, one will never be guilty of unnecessary surgery.

—C. GORDON JOHNSON, M. D.
in *Journal of the Kansas Medical Society*, p. 418, Sept. 1953

Ophthalmomyiasis

KARL F. MENK, *Lieutenant (MC) USNR*
BONNIE E. SMITH, *Chief Hospital Corpsman, USN*
MAX G. RIEVES, *Hospital Corpsman, third class, USNR*

MAGGOTS of flies occasionally infest the human body, and when the eye is involved this condition is known as ophthalmomyiasis.[1] Although over 100 cases of ophthalmomyiasis externa have been reported, the occurrence of a case in Anne Arundel County, Md., is unusual because of the geographic location. Ophthalmomyiasis externa designates those cases in which larvae are found within the orbit but external to the globe. The terms ophthalmomyiasis interna and ophthalmomyiasis interna posterior describe those cases in which larvae are found in the anterior and posterior chambers of the eye, respectively. Ophthalmomyiasis externa is uncommon in the United States but occurs frequently in Russia, North Africa, and Palestine. A case in Texas and another in Arizona have been recorded, in which the larvae of *Oestrus ovis* was the offending agent. The larva in this case was of the same species.

CASE REPORT

On 2 October 1953 a 14-year-old boy was seen in the dependent clinic of this hospital, complaining of "bugs in the eye." The boy was a resident of Annapolis and had not traveled from the community. He stated that two days previously a flying insect had hit him in the eye. The day prior to examination he had complained that the eye was sore, and his mother had seen three small wormlike motile particles in his left eye. When he was examined at the clinic, one of these small larvae was removed from the conjunctival sac and sent to the laboratory for identification. The cornea and internal eye were clear and free of invasion, and the conjunctiva, tear sac, and nose were normal. The laboratory reported that the specimen submitted was a motile first stage larva of the species of *Oestrus ovis* (Linnaeus)[2] (fig. 1).

The conjunctiva was anesthetized with 1 percent tetracaine hydrochloride (pontocaine) solution, the larvae removed, and the eye vigorously irrigated with 2½ percent boric acid solution. The patient was given 1:5000 benzalkonium chloride (zephiran) and 1:10000 epinephrine eye drops for use at home, and was re-

From U. S. Naval Hospital, Annapolis, Md.

quested to return for a follow-up examination three days later. On return the patient's eyes were normal and without evidence of inflammation. No further trouble was experienced.

Figure 1. Larva of Oestrus ovis *removed from conjunctiva of patient.* (× 200)

DISCUSSION

Oestrus ovis (sheep botfly or gadfly) has an ubiquitous distribution and is found in association with sheep or goats, which are its normal hosts. It is a large (10 to 12 mm. in length) dark-gray fly with dark spots on the dorsum of the thorax and abdomen, and is covered with a moderate amount of light-brown hair.[3] In the area about Annapolis there are a few small goat herds, and the fly is known to inhabit this area. Man is not the normal host but is often infested. Infestation usually occurs during the summer or early fall. The gravid female darts into the conjunctiva or nares and deposits first stage larvae. Because the parasite cannot develop in the human, the infestation lasts but a few days and may cause conjunctivitis which is painful but not serious. As many as fifty larvae have been reported to have been removed from the conjunctival sac of a single patient.

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Medical Problems of Civil Defense

The carnage of an atomic blast on a city would make even Napoleon's debacle at Waterloo or the British tragedy at Dunkirk seem like a minor catastrophe. Within the capabilities of field weapons so far used, a 10 percent loss in 24 hours of battle is a generous estimate. In an atomic attack on a city the casualties could run from 25 to 50 percent of the population, not in 24 hours but in 24 minutes or less.

In the field we have highly trained, disciplined, and organized units, fully equipped to carry out battle or campaign objectives. Teamwork is developed to a high degree of perfection, and even in the confusion of battle there always is control. In civil defense there may be training and organization, but all on a volunteer basis. Discipline can come only through the highest development of volunteer leadership and service. While an army unit has a medical table of organization to care for the maximum number of estimated casualties, even our largest cities cannot hope to provide sufficient professional medical personnel for the adequate care of the number of casualties that we must envision under atomic attack. The Army also has the required equipment and supplies and facilities to meet estimated casualty requirements. In civil defense, we cannot even dream of such abundance of supplies, equipment, and facilities.

Even in World War II, now considered a long time ago, all our wounded had excellent care. We had highly trained and specialized surgical teams almost up in the front lines. Farther back we had field hospitals, then mobile evacuation hospitals and the fully equipped general or base hospitals. Aside from those, we still had the great hospitals in this country. Collection and evacuation of the wounded, always through professional medical channels, was extremely rapid, orderly, and definite. In civil defense such organization in depth is just not possible. In the field we have only one front line; in civil defense every major city could be its own front line within a few hours! There might be no place to fall back and little or no reserves to call on.

—J. F. MORE
in *Journal of the American Medical Association,* p. 1008, Nov. 14, 1953

Spontaneous Hemorrhage Associated With Pericoronitis

SILAS D. CUNNINGHAM, *Commander (DC) USN*
JAMES A. HARRELL, *Lieutenant (DC) USNR-R*

THE occurrence of spontaneous hemorrhage from pericoronitis is an unusual complication. In the case reported treatment not usually rendered in the first stages of pericoronitis was required.

CASE REPORT

A 20-year-old man was first seen at the dental clinic at 0900 on 30 July 1953. His chief complaint was bleeding from the mouth, with pain and soreness in the left side of his jaw and neck. The onset of symptoms was 48 hours prior to his appearance at the clinic, and was characterized by pain in the left side of his jaw. This became increasingly severe during the intervening period. About 0430 on 30 July 1953 the patient was awakened by bleeding from his mouth which continued until he reported to the clinic. At times during this four and one-half hour period, several large clots were expectorated. The patient had delayed requesting treatment because, by coincidence, he had an appointment for this day and waited until the scheduled time to report.

Physical examination revealed a well-developed and well-nourished man. There was slight swelling near the angle and beneath the border of the left side of the mandible, and the cervical and submaxillary lymph glands on this side were enlarged and tender. Partial trismus, general malaise, some nausea, and a temperature of 99.6° F. were present.

Oral examination revealed a blood clot about two inches long and one inch wide extending from the area of the unerupted lower left third molar tooth. About one half of the occlusal surface of the third molar was exposed. The tissue around and over the tooth was red and edematous. The bleeding was from between the third molar and the gingival flap, apparently deep in the pericoronal space around the crown of the tooth. The opposing teeth of the maxilla did not contact the tissue in this area during any movements of the mandible.

From U. S. Naval Air Station, Olathe, Kans.

Our first impression was acute pericoronitis indicating conservative treatment. The blood clot was removed and the oral cavity well cleansed. After several methods of hemostasis had failed, a small strip of oxidized cellulose was inserted under the gingival flap around the crown of the tooth, and biting pressure applied with a wet gauze over the area. The bleeding stopped momentarily. The patient was given 300,000 units of penicillin G procaine intramuscularly, sedation, and instructions for home care. Before the patient left, however, profuse bleeding recurred. The same method was repeated several times without success.

Laboratory tests revealed that the clotting time was two minutes and 20 seconds, and the bleeding time was three minutes and 10 seconds, both within the normal limits. Urinalysis was negative. The blood cytology was normal except for a leukocytosis of 12,250.

Roentgenographic examination showed the involved tooth in satisfactory vertical position, with fused, cone-shaped roots having little curvature.

After considering all the findings, the decision was to extract the lower left third molar. A mandibular block was obtained with 2 percent procaine hydrochloride, and the tooth was extracted without difficulty. The remnants of the dental follicle were removed, leaving a clean socket with no ragged edges. Hemostatic absorbable gauze was inserted gently and loosely to cover completely the opening of the socket, and light biting pressure applied. The bleeding stopped immediately.

The patient was admitted to the infirmary. He was placed on a liquid diet, and penicillin and sedative therapy was continued. His condition improved steadily with no recurrence of the hemorrhage. The third day he was asymptomatic and was discharged to duty.

SUMMARY

An unusual case of spontaneous hemorrhage from an acute pericoronitis is reported. After several unsuccessful methods of hemostasis, the involved third molar was extracted, a treatment usually contraindicated in the first stages of a pericoronitis. Hemostatic absorbable gauze and penicillin therapy were employed, and recovery was uneventful. The pathologic process in this case is assumed to be infection that eroded a blood vessel, thereby producing a nonself-limiting hemorrhage.

Use of ACTH in Gas Gangrene

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REPORTS on the use of ACTH in the treatment of infections are numerous, but it has not been possible to find any report of a patient with gas gangrene who received this hormone as an adjuvant in treatment.

CASE REPORT

A 21-year-old soldier was admitted to this hospital on 10 October 1951 with penetrating missile wounds of the left leg and foot, right thigh and leg, and left hand and forearm. His injuries had occurred about 40 hours before admission, and he had been treated at a forward mobile army surgical hospital.

The patient was acutely ill. His temperature was 101° F.; pulse, 90; and blood pressure, 118/82. His right thigh and leg were more painful and swollen than the left leg. Localized areas of crepitation were present in the tissues immediately above and below the right knee joint. A roentgenogram of the right lower extremity showed a compound comminuted fracture of the right tibia and fibula as well as bubbles of gas in the soft tissues below and above the right knee joint.

The white blood cell count was 16,000 with 82 percent neutrophils and 18 percent lymphocytes. Hemoglobin was 15 grams per 100 cc. Smears and cultures from the draining wounds were positive for *Clostridium welchii*.

The patient was given 200,000 units of aqueous penicillin in 5 percent dextrose and normal saline solution intravenously, 300,000 units of penicillin intramuscularly, therapeutic doses of polyvalent antiserum, and 50 mg. of meperidine hydrochloride (demerol). A right mid-thigh amputation was performed under inhalation anesthesia. The patient received 1,000 cc. of blood during the operative procedure of one and one-half hours. His blood pressure was within normal limits during the entire operation. One hour after the operation the patient suddenly developed shock. He was semiconscious with a blood pressure of 80/50, cool clammy skin, a pulse rate of 130, and temperature of 105° F.

From Eleventh Evacuation Hospital, U. S. Army. Dr. Haedicke is now at Veterans Administration, Area Medical Office, Atlanta, Ga.

ACTH was given in addition to penicillin, repeated blood transfusions and therapeutic doses of polyvalent antiserum. During the first 12 hours 20 mg. of ACTH was given every four hours, and then given every eight hours.

After 12 hours the patient was greatly improved. His temperature dropped to 98.4° F., blood pressure rose to 128/78, pulse rate dropped to 78; he was able to sit up in bed, and asked for something to eat. His improvement continued and after 72 hours the ACTH was gradually decreased and finally stopped.

DISCUSSION

The postoperative shock and fever in this patient, probably representing severe intoxication from bacterial products, responded unusually rapidly. In this patient ACTH may have had a dual beneficial action. First, as mentioned by Finland and associates[1] and Kinsell,[2] the cortical steroids exert an antitoxic and nonspecific insulation effect on the cells which may have prevented the toxic actions of bacterial products. Second, the cortical hormones may have aided the restoration of vascular tone.

It is believed that, although antibiotics, surgical intervention, blood, and antiserum are the foundation of gas gangrene therapy, ACTH can be a valuable adjuvant.

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Control of Typhus Fever

For over four centuries, classical louse-borne typhus fever has occurred wherever countries have suffered from overcrowding and famine, due usually to war or occupation by enemy troops. In the past its presence often decided the fates of armies and countries. But the experience in North Africa and Naples, followed by that in Germany and Japan, has showed that a mass epidemic, even in the worst conditions, can be curtailed and controlled by the use of insecticides and rigorous discipline.

—C. V. HARRIES, Surgeon Commander, R. N.
in *Journal of the Royal Naval Medical Service,* p. 155, Summer 1953

Sclerema Neonatorum Treated With Cortisone

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EARLY recognition of sclerema neonatorum followed by the prompt institution of steroid therapy assumes great importance as the result of two recent reports[1,2] indicating that treatment with either cortisone or ACTH may be strikingly effective. By contrast, the mortality rate in those cases reported prior to the introduction of corticosteroid therapy was 75 percent. Three additional cases, in which there was notable improvement following the addition of cortisone to the therapeutic regimen, are presented in this report.

CASE REPORTS

Case 1. A white female infant, weighing 5 pounds 11 ounces, was delivered by outlet forceps following a 19-hour complicated labor. The second stage of labor lasted 4 hours 36 minutes because of an arrested transverse cephalic presentation which was eventually corrected by manual rotation. The mother was a 27-year-old primigravida, whose pregnancy had been uneventful. The Kahn test was negative, and her blood was type A, Rh positive. Following rupture of the membranes, the amniotic fluid was noted to be meconium stained. The infant was apneic for one minute after delivery, and effective respiration was not established for two more minutes. The cry was weak initially, but no cyanosis was noted. Oxygen by mask and caffeine sodium benzoate were given in the delivery room. On admission to the nursery, the rectal temperature was 95.2° F. and the cry was still weak. The initial physical examination revealed absence of the startle (Moro's) reflex and an excessive amount of mucous material in the mouth and pharynx. During the next 24 hours, the infant developed a generalized hypertonicity to such a degree that the possibility of central nervous system bleeding was considered and a lumbar puncture was done; this revealed xanthochromic spinal fluid containing 89 red blood cells and 27 white blood cells per cu. mm. The serum calcium was determined at this time to be 10.5 mg. per 100 cc.

From U. S. Naval Hospital, Chelsea, Mass.

During the second day, the skin began to take on the characteristic "woody" consistency seen in sclerema, and the infant's general condition continued to deteriorate. She regurgitated even small amounts of clear liquids which were given, and a brief episode of cyanosis was noted.

The typical increased consistency of the skin seemed to involve the lower extremities first, spreading rapidly to become generalized, though remaining so marked on the lower extremities and buttocks that movement of the legs seemed impossible. "Skin-bound," was Underwood's[3] original description of such an infant.

When the patient was about 60 hours old and seriously ill, 10 mg. of cortisone was given every eight hours for the first day, then every 12 hours for the next six days. Within 12 hours, the skin on the face and arms began to soften and fluids given orally were retained. During the next week, the skin steadily became more pliable, until it was completely normal except for the very minimal firmness in the gluteal regions, and she was discharged when 15 days old. Physical examination at this time revealed an apparently healthy infant. This patient was last seen in the outpatient department at 10 months of age, and was developing normally.

Case 2. A white male infant, weighing 4 pounds 8 ounces, was delivered spontaneously after three hours of labor and following a gestation of 34 weeks. The mother was a para 1, gravida 2 whose prenatal course had been uneventful. Her blood was group A, Rh negative. An anti-Rh titer done two months prior to delivery was negative. No satisfactory explanation for the premature onset of labor was determined. Nitrous oxide, oxygen, and a pudendal block with 2 percent procaine were used in the delivery. The infant's initial respirations were delayed for about 30 seconds, and manual resuscitation was given during this period.

On admission to the nursery, the infant was cyanotic, with a weak cry, and the rectal temperature was less than 96° F. Respirations were shallow and irregular and there were coarse rales throughout both lung fields. He was placed in an oxygen unit and the gas supplied at six liters per minute and 60 percent humidity. His color became pink and his condition appeared improved. Nothing was given orally. A specimen of cord blood taken at delivery was group A, Rh negative; the Coombs' test was negative. A roentgenogram of the chest revealed prominent vascular markings which were thought to be consistent with those seen in a neonate.

After 18 hours, the infant became apneic and cyanotic; caffeine sodium benzoate and artificial respiration were administered.

Spontaneous respirations were resumed shortly thereafter. At this time, an unusual firmness of the skin was first noted. This hardening progressed rapidly until it was generalized. The face was so markedly involved that the infant seemed unable to open his mouth when he tried to cry. It was our impression that the clinical picture was consistent with sclerema neonatorum, and 10 mg. of cortisone acetate and 50,000 units of aqueous crystalline penicillin every six hours was started. During the following two days, there was no essential change in the patient's critical condition, but on the fourth day he seemed more active and was able to take and retain small amounts of 5 percent dextrose in water. The rectal temperature finally stabilized at 99 to 99.2° F.; the body weight had dropped to 3 pounds 12 ounces. By the sixth day, the respirations had become fairly regular. The color continued to be good, and the skin and subcutaneous tissue were definitely softer and more pliable. Cortisone was then decreased to 10 mg. every eight hours and was continued at this level for another two days, when it was discontinued. The infant received 260 mg. of cortisone acetate in seven days, and the course was uniformly favorable. By the eighth day, there was only minimal induration of the cheeks, the skin and subcutaneous tissue over the remainder of the body having a completely normal appearance and consistency. At two weeks of age, even the slight facial induration had disappeared. The infant was discharged on the thirty-sixth day, weighing six pounds. Physical examination at discharge revealed no abnormalities. He was last seen in the outpatient department at the age of two and a half months weighing 10 pounds 12 ounces, and was normal.

Case 3. A white male infant, weighing 4 pounds 2 ounces, was delivered by outlet forceps following a six-hour first stage and a 29-minute second stage labor. The gestation was about 32 weeks. Respirations were delayed for about four minutes during which time the infant was extremely cyanotic. Manual resuscitation, an insufflator, and caffeine sodium benzoate intramuscularly, were used to initiate breathing.

On admission to the nursery, the patient's rectal temperature was 98.8° F. He was given oxygen administered at six liters per minute in a closed unit. The physical examination revealed no abnormalities. Because the membranes had ruptured prematurely, penicillin and streptomycin were given; these were later changed to terramycin. During the next two days, feedings were withheld and the infant was disturbed as infrequently as possible. He became increasingly lethargic. Although crepitant rales were heard at both bases, his color remained good.

Sclerema was first noted on the third day and consisted of induration of the lower extremity which failed to pit on pressure.

In addition, the infant's movements were slow and stiff. Ten milligrams of cortisone every six hours was begun immediately. In the next few hours, the induration spread to involve the trunk and upper extremities. The cortisone was maintained at 10 mg. every six hours for three days, and then decreased slowly for the following five days. The total amount given was 195 mg.

Increased spontaneous activity and reaction to painful stimuli, which were almost completely absent previously, were noted after 36 hours of cortisone therapy, when only 70 mg. had been administered. These improvements preceded any sign of skin softening by about 24 hours. Two and a half days after cortisone was started, however, there was definite improvement in skin consistency, noted first in the arms and trunk. At this time, feedings by nasogastric polyethylene tube were first given and retained consistently. The patient's weight, which had dropped to 3 pounds 10 ounces, began to increase slowly. In addition, the pulmonary aeration improved, and the peripheral and circumoral cyanosis disappeared. In 10 days, the skin was considered normal.

The hospital course thereafter was uneventful, except for the occurrence of two short-lived episodes of melena, both of which seemed to respond to the administration of supplemental vitamin K. The infant was discharged on the thirty-sixth day, weighing 5 pounds 10 ounces. Physical examination at this time revealed no abnormalities. When last seen in the outpatient clinic, he was nine and a half weeks old, weighed 8 pounds 3½ ounces, and was normal.

DISCUSSION

In June 1948 Hughes and Hammond[4] reviewed the significant findings in 25 previously reported cases of sclerema neonatorum and added three of their own. Various therapeutic measures (no steroids) were used, but 75 percent of the patients died. They considered that shock with insufficiency of the peripheral circulation might well be a precipitating factor in the cause of sclerema. They noted the frequent occurrence of concomitant infections and major congenital anomalies in the patients reported. The severe difficulties encountered by the three infants reported here, prior to the onset of the characteristic skin changes, would tend to bear out their theory. The "chilling-solidification" sequence of the olein-poor fat of infancy seems to be the most tenable explanation.

Previous methods of therapy have yielded uniformly poor results. The one exception to this is the possible value of thyroid extract, which has been employed effectively in several instances. The excellent results which have been achieved in all

of the patients reported in which corticosteroids have been employed, however, make this the treatment of choice.

SUMMARY

Cortisone appeared to be dramatically effective in the treatment of three infants with sclerema neonatorum.

Early recognition of this entity, which was previously fatal in most patients, has become an obligation to all physicians who care for newborn infants.

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Claudius Amyand, Surgeon

Medical history has given credit to Mestivier of France for the first surgical attack upon the appendix. Claudius Amyand of London performed the first successful recorded appendectomy on December 6, 1735, 22 years before Mestivier's unsuccessful incision and drainage of an appendiceal abscess. The life of Amyand is a collection of bits and pieces; there is no complete extant record of the career of this surgical pathfinder. He had a number of claims to fame, none of which has been sufficient to preserve his name, though he was Sergeant-Surgeon to King George II, pioneer in smallpox inoculation, Fellow of Royal Society, first principal surgeon to the Westminster Hospital, a founder and first principal surgeon to St. George's Hospital, Master of the Barber Surgeons—one of the leading London surgeons of his day—and the first surgeon to do an appendectomy. Claudius Amyand was not a man of genius, but one of solid worth who merits a nod of recognition from medical history, too long denied him.

—PHILIP G. CREESE, M. D.
in *Surgery Gynecology and Obstetrics,*
p. 651, Nov. 1953

Hyperventilation Syndrome

ROBERT L. BERGER, *Captain, MC, USA*

THE symptoms of dizziness, weakness, headache, faintness, blurring of vision, loss of balance, numbness and tingling of the lips, fingers, and toes, alone or in various combinations, frequently cause one to seek medical attention, in the belief they are caused by organic disease.[1] These symptoms are frequently emotional in origin. Often after exhaustive examinations of the eyes, ears, heart and lungs, extremities, and circulatory system, the physician is unable to find an organic cause of the patient's complaints. It has been estimated that 30 percent of patients visiting the office of a general practitioner have complaints which are due to hyperventilation.[2] The flight surgeon is fully cognizant of this condition because of the frequency with which it is seen in pilots.[3]

The syndrome can be mild and recurrent, of low grade chronicity,[4] or severe and sudden in onset. Usually an anxiety state or "fear reaction" will initiate a progression of symptoms which may be limited to mild attacks of dizziness, weakness, or headache, or may develop into tetany, shock, and semicoma. A patient observed recently is of interest because he represents the severe form of this syndrome.

CASE REPORT

A 21-year-old soldier came to the dispensary on the morning of 2 August 1953, complaining of hives. Urticaria had appeared the day before and was distributed in small patches over his arms, legs, trunk, and face. Despite specific questioning, the cause could not be elicited. He had contacted poison ivy every year since he was age five and in 1950 he was studied by three physicians for multiple "aches and pains," but no cause was found. His mother had hives when she became nervous.

Tripelennamine hydrochloride (pyribenzamine) tablets (50 mg. every four hours) were prescribed. About four hours later he was found on his bed in a semiconscious state. His skin was pale, cold, and clammy. His legs and arms were twitching, and his head was jerking forward rhythmically every three or four seconds. The nail beds of his fingers and toes were slightly cyanotic.

From U. S. Army Dispensary, Fort Slocum, N. Y.

He was moved by ambulance to the dispensary where his pulse rate was 80 per minute, and of fair quality, and his blood pressure was 116/60. Despite the relatively normal pulse and blood pressure it was believed that a state of anaphylactic shock was pending, perhaps due to the same antigen causing the hives which had become more widespread. He was given 1 cc. of a 1:1000 solution of epinephrine intramuscularly. Respiration when first observed appeared normal but several seconds after the injection of epinephrine, the respiratory rate became about 30 per minute. Still in a somewhat stuporous, shocklike condition he began to complain of cramps in his legs, which were more cyanotic than previously. Because it was obvious that the patient was overbreathing, a paper bag was obtained so that he could rebreathe his expired air. Before the bag could be placed over his face, his hands and feet assumed the typical carpopedal spasm associated with tetany. Within a minute of rebreathing his expired air the patient became moderately alert, was able to sit up, and felt markedly improved.

When the cause of the symptoms was explained to the patient he admitted that as his hives became worse, he had become anxious about himself. He felt dizzy and weak and experienced a feeling of suffocation which caused him to inspire deeply to catch his breath.

DISCUSSION

In brief, the physiologic basis for the hyperventilation syndrome is overbreathing that causes a decrease in the alveolar concentration of carbon dioxide, a lowered carbon dioxide of the blood, diminished plasma bicarbonate, elevation of the plasma pH, and alkalosis. Most patients are totally unaware of the disturbed respiratory rhythm,[3] but some voluntarily hyperventilate to relieve a periodic sensation of suffocation. The early symptoms which ensue are believed due to the hypocapnia. Later symptoms are undoubtedly caused by the effect of the altered pH of the blood on the tissues. Grant and Goldman[5] in 1920 first recognized that tetany could be induced by hyperventilation.

The appearance of cyanosis in the patient reported on was misleading. One would not expect to see cyanosis in a person with a normal amount of hemoglobin and a high oxygen intake. It is assumed that as a result of the tetanic muscular contractions a stagnant anoxia was created in the venules of the extremities, producing cyanosis. The injection of epinephrine, in retrospect, apparently increased the already elevated concentration of epinephrine the patient had liberated due to his fear reaction. The liberation of epinephrine probably plays an important role in the pathogenesis of the syndrome.

Hyperventilation can occur as a compensatory mechanism in metabolic acidosis (an increase in anions or a decrease in available base). The increase in anions may be due to chloride, as in sodium chloride and ammonium chloride therapy; phosphate, sulfate, or organic acids in renal insufficiency or in diabetic acidosis.[6] Musser and associates[7] noted that hyperventilation frequently produced symptoms in patients with diabetes, which were often mistaken for hypoglycemic reactions. Rebreathing expired air, or other measures used to neutralize alkalosis, can only aggravate a pre-existing acidotic state. Patients with chronic pulmonary disease and emphysema are less apt to develop symptoms of hyperventilation.

Dizziness is usually the first symptom produced by hyperventilation[8] and is an accompanying symptom of cerebral anoxia as seen in arteriosclerosis, aortic stenosis and insufficiency, and Adams-Stokes syndrome. In hyperventilation, the respiratory alkalosis significantly alters the release of oxygen from hemoglobin. With a lowered carbon dioxide pressure in the blood, hemoglobin clings more tenaciously to its bound oxygen and less oxygen is released to the tissues. Tissue oxygenation is also hampered by the decrease in blood flow because of the contracted blood vessels in tissues with low carbon dioxide pressure.[9]

The hyperventilation syndrome should be considered when dizziness, weakness, and headache are the presenting complaints. The use of voluntary forced respiration will often produce, within one to three minutes, symptoms that the patient will readily admit were those which caused him to seek medical advice. Normal persons also will show the same symptoms, but some patients are thrown into a state of tetany because they are on the threshold of attacks periodically or constantly.[2,10] A pre-existing alkalosis[11] predisposes a person so that even mild hyperventilation can produce symptoms. Subconscious worry or fear can cause overbreathing. Most patients appreciate the physician's demonstration that the terrifying sensations are not imaginary.[9] The forced breathing test will often prevent future attacks because it makes the cause of the symptoms obvious to the patient.

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Early Clinical Research in Scurvy

James Lind, a pioneer in clinical nutrition experimentation, was born in 1716 and died 78 years later, the respected head of the Royal Naval Hospital at Haslar. Although he deserves full honor for his recommendations on personal cleanliness, hygiene, and sanitation, which really began the science of naval medicine, and for his studies of tropical preventive medicine, he is best known for his report of a simple experiment on board the H. M. S. *Salisbury* in 1747.

Lind selected 12 scorbutic sailors from the many on board. These men were as alike as possible in regard to symptoms and physical condition. He then tested simultaneously the various therapies in common use at that time. Six groups of two men each were formed. In addition to the usual rations, one group received a quart of cider a day, another 25 drops of an elixir of dilute sulfuric acid three times a day and a mouth wash of this preparation. Similarly, other groups received vinegar, sea water, and a pill containing garlic, radish, mustard seed, and the like. One group of two men had a lemon and two oranges daily.

Within a week these last two recovered to such an extent that one man returned to duty, while the other acted as nurse for the other ten, whose condition scarcely changed. This study was well planned and concise and, even according to modern advanced ideas on scientific research, it was a well-controlled experiment. Lind's clear statements of his careful observations leave no question as to the importance of the findings.

—S. O. WAIFE, M. D.
in *Journal of Clinical Nutrition,*
p. 472, Sept.-Oct. 1953

Tubo-Ovarian Abscess Complicating Intrauterine Pregnancy

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A REVIEW of the literature of tubo-ovarian infections complicating intrauterine pregnancy yielded scant information. McCall,[1] in a discussion of surgical complications of pregnancy, concluded that salpingitis is seldom a problem. Metzger[2] in 1939 made a 15-year review of French literature and found only seven references.

This communication in describing tubo-ovarian abscess in a patient with a pregnancy of 20 weeks' gestation, reports an infrequent complication which presents an unusual problem in diagnosis and management.

CASE REPORT

A 24-year-old woman, gravida 3 para 2, presented herself at the obstetrical clinic on 5 December 1952, and stated her last menstrual period began on 13 August 1952. The estimated date of confinement was 20 May 1953. She was completely asymptomatic except for the amenorrhea and a sensation of weight in the lower abdomen.

The onset of the patient's menses occurred at the age of 14 and the menses were usually regular. In 1947 the patient received a 10-day course of penicillin for syphilis. In December 1948, after a normal pregnancy, she delivered her first child. Four weeks post partum she was hospitalized for pyelitis and peritonitis, which responded well to antibiotics and supportive therapy. In 1950 she received penicillin for gonorrhea with apparently good results. In March 1952, again after an uneventful pregnancy, she delivered a normal child, but about six weeks post partum developed pyelitis and salpingitis requiring hospitalization. Treatment consisted of bed rest, antibiotics, and supportive measures over a period of two weeks. When discharged on 12 May 1952, a pelvic examination revealed a slightly enlarged uterus, displaced to the right, with tenderness and thick-

From U. S. Naval Hospital, Newport, R. I. Lt. Gizynski is now assigned to the Dispensary, Portsmouth Naval Shipyard, Portsmouth, N. H.

ening in the right adnexa. The coexisting inflammatory disease was treated on an outpatient basis.

Examination revealed a small, thin woman, who appeared in good health. Temperature, pulse, respirations, and blood pressure were within normal limits, and positive findings were limited to the pelvic examination. The vagina was free of discharge. The uterus was enlarged to the size of a 20 to 22 weeks' gestation and displaced to the left by a firm, tense, slightly tender mass measuring 6 to 8 cm. in diameter, which apparently filled the right pelvis and was adherent to the uterus and the right lateral pelvic wall.

Routine prenatal laboratory tests were negative. The white blood cell count was 10,150 with a normal differential. A roentgenogram of the abdomen showed early calcification of a fetal skeleton projected onto the left innominate bone. The uterus could not be outlined. There was no roentgenographic evidence of a pelvic mass, but the impression was that of ectopic pregnancy.

The provisional diagnosis was an intrauterine pregnancy of 20 weeks' duration, complicated by a right ovarian cyst. The patient was seen again 10 days later. Pelvic examination at that time revealed the mass to be 8 to 10 cm. in size. In view of the apparent progression of the lesion, the patient was hospitalized on 16 December 1952 and given 600,000 units of penicillin and 1 gram of streptomycin daily, in addition to supportive therapy and a prophylactic antiabortal regimen, preparatory to surgery.

On 18 December 1952, a laparotomy was performed under spinal anesthesia supplemented by thiopental sodium (pentothal), nitrous oxide, and oxygen. The uterus was enlarged to about 20 weeks' gestation and displaced into the left lower abdominal quadrant. The greater portion of the true pelvis was filled with a fluctuant mass 8 cm. in diameter, which was fixed posteriorly by numerous small bowel adhesions. The leaves of the right broad ligament formed its anterior border, and laterally the mass was adherent to the pelvic wall on the right and to the uterus on the left. The proximal one third of the right fallopian tube was identified; distally, it was incorporated into the mass. The right ovary could not be identified. The left tube and ovary showed no active inflammatory process. The mass was dissected free of the uterus, with sacrifice of the right tube. In so doing, the mass was inadvertently opened, and a small amount of purulent material exuded into the operative field. The contents of the abscess were aspirated and a culture taken which subsequently produced a growth of bacteria reported by the pathologist as pneumococci.

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Postoperatively, 6 million units of penicillin, 8 grams of streptomycin, and 7½ grams of sulfadiazine were administered. In addition, the patient received 20 mg. of progesterone intramuscularly daily, meperidine hydrochloride (demerol) for pain, and phenobarbital for sedation. A Miller-Abbott tube was used and intravenous fluids were given for the first three postoperative days. The patient was permitted out of bed after 12 hours. Her course was uneventful except for mild lower abdominal cramping which responded well to increased sedation. She was discharged on the tenth day.

The patient was seen in the prenatal clinic at regular intervals throughout the remainder of her pregnancy, and was maintained on daily 60-mg. doses of progesterone given orally. On 11 May 1953, she was readmitted in active labor and after three hours spontaneously delivered a living female infant. The immediate postpartum course was uneventful. The highest recorded postpartum temperature was 98.6° F., and she was discharged on the fifth day. Pelvic examination at this time revealed a normally involuting uterus without adnexal tenderness or masses. Routine postpartum examination at six weeks revealed normal genital involution, and after 12 weeks there was no evidence of pelvic disease. The condition of the infant was excellent.

DISCUSSION

This patient presented a significant history with two episodes of puerperal pelvic peritonitis which responded to treatment. During remissions the residual infection and anatomic scarring were insufficient to prevent pregnancy. Conception apparently occurred through the left tube, suggesting that unilateral inflammatory involvement of the adnexa is possible and may not be conclusive as a differential diagnostic criterion of ectopic pregnancy.

Bacteriologic examination of the lesion in this case revealed pneumococci. Black[3] reported that ovarian abscesses were streptococcal in origin while tubo-ovarian infections were primarily gonorrheal. Metzger concluded that *Escherichia coli* and staphylococci, and only rarely gonococci, were responsible for these infections. In cases gathered from the literature where cultures were taken, the organisms isolated were *E. coli*,[4-6] staphylococci,[5-7,9] streptococci,[7,8,10] gonococci,[11] and pneumococci.[9]

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Adiposity and Atherosclerosis

Until recently, atherosclerosis was considered an inevitable consequence of ageing. Today our approach to its etiology is more hopeful and most would agree that the basic cause of this morbid process may well be a metabolic defect. What this defect is, we cannot say, but we may assume that it involves the biosynthesis, the transport, the catabolism *or* the excretion of certain lipids and, perhaps, especially of cholesterol, in the form of lipoproteins. Many methods have been used to study the blood lipids. All show considerable deviations from the normal plasma lipid pattern, which is especially marked in the younger victims of atherosclerosis. This is so, whether they have a condition known to affect lipid metabolism, like diabetes, or whether they have an inborne error of metabolism, which sees its most marked expression in cases of familial xanthomatosis. If it be agreed that severe atherosclerosis in young subjects is the result of a disorder of lipid metabolism, we must then ask ourselves whether we may similarly ascribe atherosclerosis in the older population to what must be a most widespread disorder. If we *do* accept such a thesis, we must presume the metabolic derangement generally speaking to be of a low order, so that its effects become apparent, as a rule, rather late in life. If this is so, we may expect to find factors which would have an accelerating influence on such a disorder. Adiposity has been accused of such a role.

—W. FORD CONNELL, M. D.
in *Canadian Medical Association Journal,*
p. 248, Mar. 1954

GEN. OTIS BENSON AND OTHER OFFICERS ELECTED BY AERO MEDICAL ASSOCIATION

Brigadier General Otis O. Benson, Jr., USAF (MC), Director of Staffing and Education, Office of the Surgeon General, U. S. Air Force, was installed as president of the Aero Medical Association at the conclusion of the society's 25th anniversary meeting in Washington 29-31 March. Kenneth E. Dowd, M. D., Montreal, Canada, was named president-elect, and the following were elected vice presidents: Jan H. Tillisch,

New officers of Aero Medical Association discuss advantages of the C-124 Globemaster for air evacuation of patients. Left to right: Air Vice Marshal E. A. Daley, Brig. Gen. Miguel Lafont, Brig. Gen. Otis O. Benson, Jr., and Maj. Klaus Weisinger.

M. D., Rochester, Minn.; Brigadier General Miguel Lafont, Surgeon General of the Spanish Air Force; Air Vice Marshal E. A. Daley, Director General of Medical Services, Royal Australian Air Force; Major Klaus Weisinger, Chief Flight Surgeon, Swiss Air Force; and Seymour Fiske, M. D., New York, N. Y.

Naval and Air Force members elected this year to the grade of Fellow are Lt. Comdr. Edward L. Beckman (MC) USN, Comdr. Sidney I. Brody (MC) USN, Lt. Col. Vincent M. Downey, USAF (MC), Col. George B. Green, USAF (MC), and Col. Kenneth E. Pletcher, USAF (MC).

The 1955 meeting of the Association will be held in Washington.

Technic for Taking Band Impressions

EDMUND E. JEANSONNE, *Commander (DC) USN*

CURRENT design in bridge abutments, single crowns, or other major rehabilitation abutments strongly emphasizes full surface coverage. The reason for this is obvious, because greater strength and balance will result therefrom. At the same time prevention of decay of the restored tooth structure is assured.

This method of restoration has always presented two major problems to practitioners who use the seamless copper band impression method as the technic of choice: (1) accuracy, and (2) prevention of possible gingival tissue damage. The necessary equipment required for this technic is shown in figure 1.

PREPARATION OF BAND

Selection of a proper size copper band is most important, but may be simplified by using one of the handy type storage and gage chests on the commercial market. The size of the band can be determined by fitting it on the preparation, being careful not to press it beneath the gingival tissues. After this has been accomplished, the labial or buccal surface of the band should be marked with a hole or notch, or otherwise indicated to aid in contouring the band to conform with the preparation (fig. 2). The cervical contour of the preparation should be thoroughly observed, and the deep or shallow dips of the buccal and lingual tissue noted,

Using the handpiece and a 5/8-inch heatless stone, the band may be cut to the desired shape. Shaping a band with a heatless stone slightly rounded on the cutting edges is easier than with a square-edged stone, as the latter usually produces a stepping effect. There seems to be less occasion of collapsing the band in cutting, if the stone is turning from the inside of the band toward the outside. Because the contoured edge of the band is quite rough, this barbed edge is removed by again using the large heatless stone (figs. 3 and 4).

This smoothed edge (1½ to 2 mm. in height) is made into an indicator or gage line which can be used as a visual aid in noting how far the edge of the band has been inserted under

From U. S. Naval Academy, Annapolis, Md.

the gingival tissue. The inside of the band is smoothed with a large conical stone. After all cutting on the band has been completed, it is annealed by heating to a bright red over the bunsen burner and quenching in water. An annealed band is much softer and adapts more easily to the convexities of the tooth. This also prevents any spring created by the properties of the copper metal from distorting the completed impression.

FITTING OF BAND

The contoured band is placed over the tooth, any correction in contour which should be made is noted, and the fit of the band

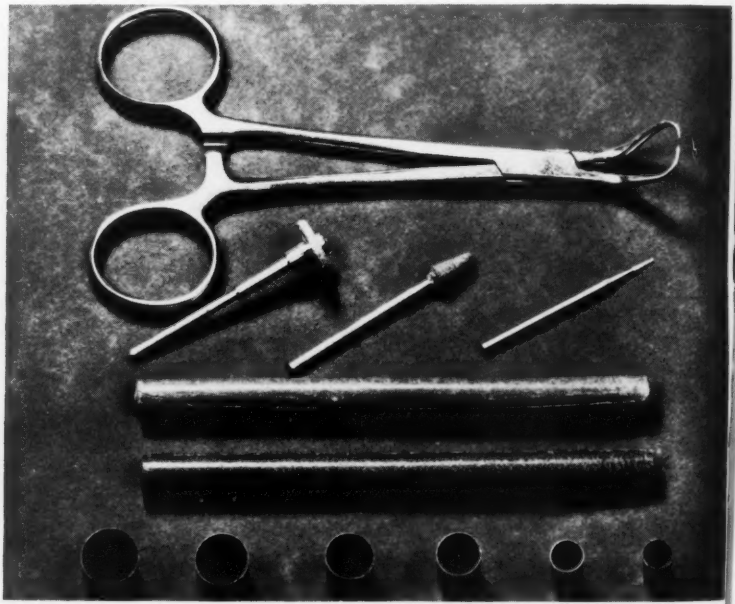

Figure 1. Equipment required.

is checked. It should fit snugly in its entirety. A band that is too large is certain to collect tissue into the impression, as well as damage the tissues. If the band is too small, it will never find its way into the final position and cover all parts of the preparation. When the final check for accuracy is made, the band should always be positioned so that it is in line with the long axis of the tooth. Thus the band will always be inserted into the preparation in the same position, and there will be less danger of fracturing any part of the impression when it is removed. The position of the gage line beneath the gingival tissue should be noted at this time.

In preparing crowns where full or partial shoulders have been cut—whether for better retention, veneer inserts, or clear finish lines—a more difficult problem is presented. If it is not inserted in the long axis of the tooth or in the position for which it was cut and tried, there is little hope of attaining an accurate impression.

In using stick compound as the impression material, vaseline on the fingers and on the bracket table or other working area will

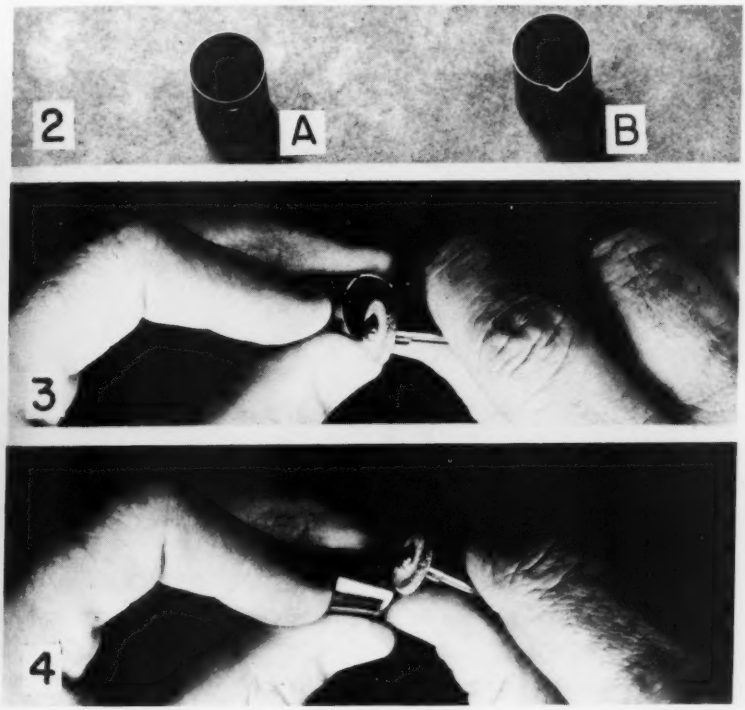

Figure 2. (A) *Band marked with hole.* (B) *Band marked with notch. Figures 3 and 4. Removing barbed edge with stone.*

prevent any hot compound from sticking to the fingers, and will aid in the manipulation of the compound. If the compound is melted into the band, overheating or bubbling of the compound should be prevented. When the compound is placed in the band, the shape of the contoured band should not be disturbed in any way. Just prior to taking the impression, the tooth should be thoroughly washed of blood and saliva, and painted with a lubricant such as tincture of green soap. The loaded band is then placed over the

preparation in proper relation to the long axis of the tooth, carefully pressed into position until the gage marks on the gingival edge are in the correct position, and the compound allowed to cool thoroughly with or without water.

In the process of removal, many good impressions have been destroyed by squeezing, tearing, or using an instrument not suited to the task. The procedure can be simplified by the use of a surgical towel clamp. The clamp is placed in position on the top edge of the band, the sharp points pressing lightly enough into the metal and compound so that finger pressure applied with the other hand will lift it easily (fig. 5). Lateral or rocking pressure should not be exerted in any direction, as this is sure to give a false impression.

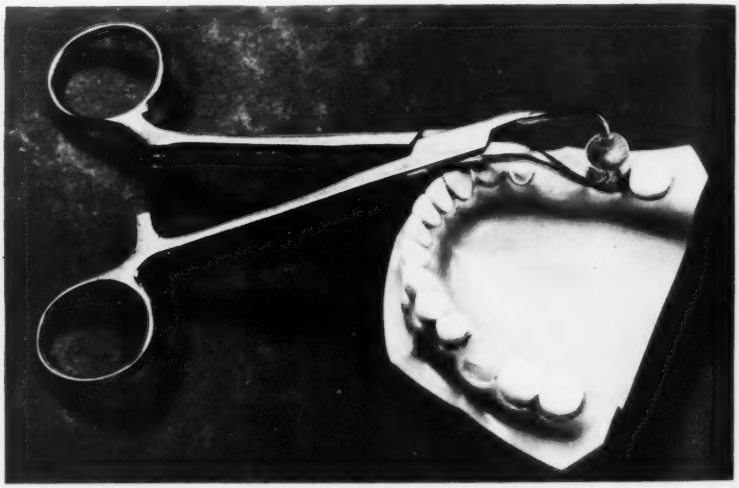

Figure 5. Use of surgical towel clamp in removing impression.

If the impression is not a satisfactory one, the same band can be used again by melting out the compound; however, the impression should be checked so that any necessary improvement in shape can be made. Before starting a second impression, the gingival area should be checked for any particles of compound which may have broken away from the first impression, as their presence would ruin a subsequent one.

Preservation of gingival tissue in temporary coverage with aluminum and celluloid forms also requires a careful technic. All the caution taken to preserve the tissue while taking an impression would be lost with one poorly placed temporary crown.

Acrylic Cast for Baseball Finger

JOHN T. LOGUE, *Captain, USAF (MC)*

AVULSION of the extensor tendon from its insertion on the distal phalanx results in the so-called baseball, drop, or mallet finger. Proper healing of this type of injury, either after surgical repair or conservative treatment, depends on prolonged immobilization of the finger in the proper anatomic and physiologic position. Adequate relaxation of the extensor tendon can only be obtained by maintaining the proximal interphalangeal joint at about 60° of flexion while the distal interphalangeal joint is in hyperextension.[1]

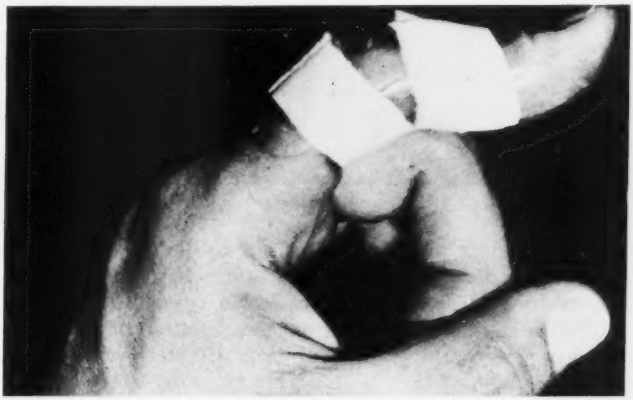

Figure 1.

The anatomic requirement for immobilization, though simple, is difficult to maintain by splinting or plaster casts except for short periods, because constant care is necessary to prevent slipping. Patients with this type of injury should have a lightweight cast of simple construction which does not need constant care and frequent adjustments.

An acrylic resin splint (fig. 1) has been used at this dispensary. An impression compound mold of the finger to be splinted is made, a plaster model of the finger is cast, and from this finger

From U. S. Air Force Dispensary, Landsberg Air Base, Germany.

model an acrylic splint is made (fig. 2). These splints are tight and maintain the desired anatomic position without interference with the circulation. They can be bivalved, like casts, and unnecessary sections cut away to provide windows for dressings and for evaporation of perspiration.

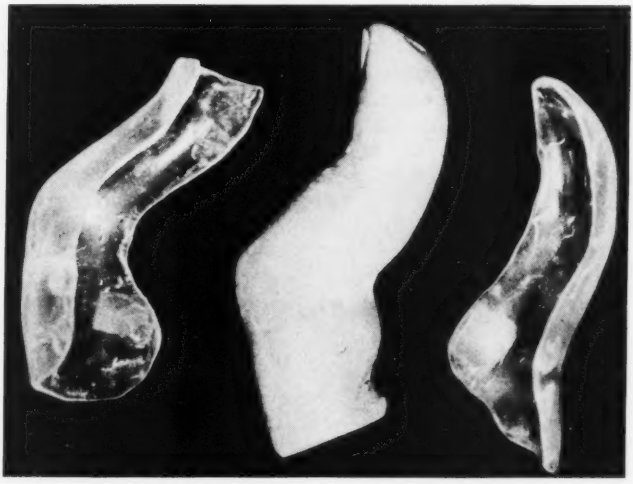

Figure 2.

An acrylic cast or splint can be prepared in a short time at any medical installation with a dental laboratory service. The objections of the time and effort required in constructing such a splint is compensated for by its convenience, comfort, and efficiency during the six weeks of immobilization required in the proper management of this type of injury. For those medical officers who lack the facilities required for acrylic cast work, the splint recently described by Spigelman[2] would seem to be the most acceptable yet devised.

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"Neuroses" in Older Patients

I am always reluctant to diagnose a neurosis in the case of a person past 55 who has never been neurotic before. It is far more likely that the nervous symptoms that he has recently developed are on an organic basis.

—WALTER C. ALVAREZ, M. D.
in *Geriatrics*, p. 668, Dec. 1953

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• First Oak Leaf Cluster.

In this department each month the names of officers of the medical services who have been awarded decorations by the United States Army, Navy, or Air Force since the beginning of the Korean campaign are published following receipt of this information from official sources—*Editor.*

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REGULAR MEDICAL CORPS OFFICERS CERTIFIED BY SPECIALTY BOARDS

The American Board of Urology

Activated in 1935 to certify qualified physicians, the American Board of Urology on 30 June 1953 had accorded this recognition to 1,809 practitioners of this specialty of whom, according to the Surgeons General of the U. S. Army, Navy, and Air Force, 28 are regular Medical Corps officers of the three services. These officers are:

Alton C. Abernethy, *Capt., USN*
R. Townsend Artman, *Col., USA*

Ross P. Black, *Comdr., USN*
John P. Brady, *Capt., USN*

Raymond R. Callaway, *Capt., USN*
John T. Cangelosi, *Comdr., USN*
Harold J. Cokely, *Capt., USN*
Mark S. Curtis, *Comdr., USN*

Claude C. Dodson, *Col., USA*

Raymond J. Getz, *Lt. Col., USA*

John S. Hanten, *Comdr., USN*
James J. Hayes, *Capt., USN*
Charles W. Hoffman, Jr., *Lt. Col., USA*
Peter E. Huth, *Capt., USN*

Spencer Johnson, *Capt., USN*

Avery P. King, *Lt. Col., USA*

Earl C. Lowry, *Col., USA*
Frank W. Lynn, *Lt. Col., USA*

Louis K. Mantell, *Col., USA*
Urquhart L. Meeter, *Lt. Col., USAF*
Sidney Miller, *Lt. Col., USA*

Lyle A. Newton, *Capt., USN*

John F. Patton, *Col., USA*

Robert C. Rauscher, *Lt. Col., USA*
John W. Rogers, *Capt., USN*
Robert B. Rowe, *Lt. Col., USA*

John A. Schindler, *Col., USAF*
Jack W. Schwartz, *Col., USA*

This is the eighth of a series. The names of officers certified by the American Board of Internal Medicine will be published in the June issue.

Anesthesia in Cardiac Disease

No longer should cardiac disease be regarded as a contraindication to essential operations. But if general anaesthesia is required—and it can have some advantages for the patient in terms of reduced metabolism and increased oxygenation—it should be approached as a major undertaking, even if the operation itself is brief and trivial.

From an editorial in *Lancet*, p. 549, Sept. 12, 1953

DEATHS

ALLISON, Betty Jean, Second Lieutenant, USAFR (AFNC), U. S. Air Force Hospital, Sampson Air Force Base, N. Y.; graduated in 1952 from the Columbia Hospital School of Nursing, Columbia, S. C.; ordered to active duty 22 February 1953; died 19 March 1954, age 25, of injuries received in an automobile accident near Sampson Air Force Base.

BRADLEY, Kathleen Anne, Ensign (NC) USNR, U. S. Naval Hospital, Memphis, Tenn.; graduated in 1951 from Massachusetts General Hospital School of Nursing; ordered to active duty 17 October 1952; died 14 March 1954 in Memphis, age 23, of acute rheumatic fever.

BUSENBARK, Alvero Johnnie, Second Lieutenant, MSC, USAR, Company "B," Medical Training Battalion, Medical Replacement Training Center, Camp Pickett, Va.; entered military service 27 August 1940; commissioned a second lieutenant 2 December 1952; died 20 February 1954 in Omaha, Nebr., age 31, of asphyxiation by carbon monoxide.

DORMAN, Elinor Tina, Lieutenant (NC) USN, U. S. Naval Hospital, St. Albans, N. Y.; graduated in 1938 from the St. Francis School of Nursing, Hartford, Conn.; entered the naval service on 3 November 1942; died 21 March 1954 in St. Albans, age 36, of a malignant neoplasm.

FROST, Herschel Clifford, Major, MSC, USA; Walter Reed Army Hospital, Washington, D. C.; attended Drury College, Springfield, Mo.; entered military service 22 July 1930; commissioned a second lieutenant 17 July 1942; died 15 January 1954 in Washington, age 46, of myocardial infarction, coronary occlusion, and arteriosclerotic heart disease.

HALEY, William, Major, MSC, USAR, Headquarters & Headquarters Company, 15th Medical Battalion, Far East Command; entered the military service 9 August 1938; commissioned a second lieutenant 2 October 1942; died 1 February 1954, age 33, in an aircraft accident near Japan.

ROGERS, Henry Hamilton, First Lieutenant, USAF (MC), U. S. Air Force Hospital, Donaldson Air Force Base, S. C.; graduated in 1952 from Vanderbilt University School of Medicine; ordered to active duty 1 July 1952; died 11 March 1954, age 28, at the Walter Reed Army Hospital, Washington, D. C., of myocardial infarction.

TEICHER, Ralph, Captain, USAFR (MC), U. S. Air Force Hospital, Maxwell Air Force Base, Ala.; graduated in 1947 from Long Island College of Medicine; ordered to active duty, 8 November 1952; died 28 February 1954, age 28, of injuries received in an automobile accident near Grand Bay, Ala.

VIGUE, Ida Rosaline, Lieutenant, junior grade (NC) USNR, U. S. Naval Hospital, Portsmouth, Va.; graduated in 1950 from the Notre Dame School of Nursing, Manchester, N. H.; entered the naval service in November 1951; ordered to active duty 10 January 1952; died 7 March 1954 in Portsmouth, age 26, of barbiturate poisoning.

A MESSAGE FROM THE A. M. A.

In the March issue a brief outline of the principal provisions of the "doctor draft law," of interest to physicians on active duty was presented in this column. To round out this picture, it is believed that a note on certain of the regulations issued by the Department of Defense under that law may likewise be of interest.

The implementing regulations which were published on 7 October 1953 (Number 1205.1) consolidated, reissued, and modified various earlier Department of Defense directives promulgated pursuant to Public Law 779, 81st Congress, as amended. Certain provisions of the regulations which established new policy or substantially amended previous regulations will be noted briefly.

The new regulations designate the Department of the Army as the "executive agent" for the Department of Defense, and charge it with administrative responsibilities in connection with determining the acceptability of special registrants, maintaining liaison with Selective Service headquarters, and making departmental allocations of special registrants. The regulations contain detailed provisions on professional, physical, and moral standards prerequisite to acceptability and in addition outline the requirements with regard to the circumstances under which special registrants may be commissioned.

Determination of Commissioned Grade of Physicians and Dentists

Years of experience	*Army and Air Force*	*Navy*
Less than 4	First Lieutenant	Lieutenant (jg)
4 or more but less than 11	Captain	Lieutenant
11 or more but less than 18	Major	Lieutenant Commander
*18 or more	Lieutenant Colonel	Commander

*The grade of colonel or its equivalent may be given those with 25 years or more professional experience who have achieved national prominence as authorities in their specialties.

An amendment to the regulations issued on 10 November 1953 provides that the rank assigned to those commissioned will be based on the number of years spent in appropriate professional activities following graduation and prior to date of entry on active duty, as outlined above.

The new regulations contain provisions relative to readjustment of grades for those now on active duty or in a reserve component. Any physician appointed in a reserve component or now

From the Council on National Emergency Medical Service of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense.—*Editor.*

serving on active duty, who would have been entitled to a higher grade if Public Law 84, 83d Congress had been in effect at the time of his entrance on active duty, will be entitled to an adjustment of grade.

The regulations further provide that a reservist will, immediately prior to being ordered to active duty, be reappointed or promoted to such higher grade to which he may be entitled, and that a special registrant on active duty will, at the earliest practicable date, be reappointed or promoted to such higher grade.

Finally, it is provided that appointments to grades higher than major or lieutenant commander can be made without referral of the case to a board of officers convened by the secretary of the service concerned.

Ordering commissioned personnel to active duty. With regard to ordering commissioned personnel to active duty, the regulations provide:

1. Reserve medical personnel will, *insofar as practicable,* be ordered to duty in accordance with the priorities established in the "doctor draft law."

2. Members assigned to organized reserve units will be called to active duty as individuals in accordance with their priority except when their units are brought into active duty.

3. Physicians who are members of a National Guard unit will not be called to active duty at this time, (unless the unit is called) providing they were members of such a unit prior to June 25, 1950.

4. The "essentiality" of medical reservists will be determined by the National Advisory Committee to the Selective Service System. Requests for delay on this basis may be made by a physician or an employer directly to the branch of the Armed Forces involved. An appeal may be submitted directly to the Secretary of Defense in the event of a request for such a delay is disapproved.

5. Any physician qualified for a reserve commission is given an opportunity to volunteer for a period of active duty of *not less than 24 months.*

Interservice transfers. According to the regulations, physicians holding reserve commissions in the armed services may apply for transfer to another service. An application containing specific identifying information must be submitted through command channels and must bear the endorsement of the parent and requested departments, irrespective of their approval or disapproval in each case.

PUBLICATIONS BY OFFICERS OF THE MEDICAL SERVICES

Abrams, W. B., First Lt., MC, AUS, and Chesley, G. L., Capt., MC, AUS: Ballistocardiogram in acute rheumatic fever. *Circulation.* 9: 400-407, Mar. 1954.

Barr, N. L., Comdr. (MC) USN: Radio transmission of physiological information. *Mil. Surgeon* 114: 79-83, Feb. 1954.

Beckman, E. L., Lt. Comdr. (MC) USN; Duane, T. D., Lt. (MC) USNR; Ziegler, J. E., Lt. (MC) USN; and Hunter, H. N.: Some observations on human tolerance to accelerative stress; phase IV, human tolerance to high positive G applied at rate of 5 to 10 G per second. *J. Aviation Med.* 25: 50-66, Feb. 1954.

Bell, A. L. L., Jr., First Lt., USAF (MC), and Wood, J. E., Capt., USAF (MC): New device for measuring the effect of continuous positive pressure breathing on lung volumes and ventilation. *J. Aviation Med.* 25: 67-74, 88, Feb. 1954.

Bernstein, L., Capt., USAF (DC), and Small, M., Capt., USAF (MC): Foreign body in neck. *J. Am. Dent. A.* 48: 312, Mar. 1954.

Bernstine, M. L., Lt. (MC) USNR: Cardiac arrest occurring under trichloroethylene analgesia; report of case with recovery. *A. M. A. Arch. Surg.* 68: 262-266, Feb. 1954.

Bowers, W. F., Col., MC, USA, and Schear, E. W., Maj., USAF (MC): Inguinal hernia problem viewed from standpoint of recurrent cases. *Mil. Surgeon* 114: 163-172, Mar. 1954.

Bowman, M. S., Lt. (MC) USN: Familial occurrence of "idiopathic" calcification of cerebral capillaries. *Am. J. Path.* 30: 87-97, Jan.-Feb. 1954.

Bradley, J. L., Comdr. (DC) USN, and Hildreth, E. R., Lt. Comdr. (DC) USN: Intraoral open reduction of fracture of mandible. *Oral Surg.* 7: 225-231, Mar. 1954.

Briggs, G. W., Capt., MC, USA; Sifre, R. A., First Lt., MC, USA; and Overholt, E. L., Maj., MC, USA: Pneumatosis cystoides intestinalis; report of case. *Ann. Int. Med.* 40: 618-626, Mar. 1954.

Buel, J., Col., USAF (MSC): Recent contributions of medical service corps to military medicine. *Mil. Surgeon* 114: 113-117, Feb. 1954.

Burch, R. J., Col., USAF (DC): Radicular cyst within maxillary sinus. *J. Oral Surg.* 12: 72-73, Jan. 1954.

Dunn, J. J., First Lt., MC, AUS; Sarrell, W., Capt., MC, AUS; and Franklin, R. B., Capt., MC, USA: Wolff-Parkinson-White syndrome associated with paroxysmal ventricular tachycardia. *Am. Heart J.* 47: 462-469, Mar. 1954.

Fair, J. R., Maj., MC, USA: Uveitis: a military problem. *A. M. A. Arch. Ophth.* 51: 364-368, Mar. 1954.

Fusillo, M. H.; Roerig, R. N., Lt. Col., MSC, USA; Metzger, J. R., Capt., MC, USA; and Ernst, K. F., Col., MC, USA: Phage typing antibiotic-resistant staphylococci. *Am. J. Pub. Health* 44: 317-322, Mar. 1954.

Giannini, J. T., Comdr. (MC) USN: Surgical treatment of plantar warts, callosities and ulcers. *Plast. & Reconstruct. Surg.* 13: 130-136, Feb. 1954.

Girard, K. F., Second Lt., MSC, USAR, and Murray, E. G. D.: Influence of sustained monocytosis upon antibody response in rabbits to various antigens. *Canad. J. Biochem. & Physiol.* 32: 1-13, Jan. 1954.

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Girard, K. F., Second Lt., MSC, USAR, and Murray, E. G. D.: Presence of antibody in macrophage extracts. *Canad. J. Biochem. & Physiol.* 32: 14-19, Jan. 1954.

Gleiser, C. A., Lt. Col., VC, USA: Review of some basic concepts of biology and pathogenesis of acute ionizing total body radiation. *J. Am. Vet. M. A.* 124: 220-224, Mar. 1954.

Harris, N. O., Lt. Col., USAF (DC): Role of radioactive isotope in bone metabolism. *Mil. Surgeon* 114: 108-111, Feb. 1954.

Hartman, J. L., Brig. Gen., VC, USA: Recent advances in military veterinary medicine. *Mil. Surgeon* 114: 93-96, Feb. 1954.

Houser, H. B., Maj., USAF (MC); Clark, E. J., Capt., USAF (MC); and Stolzer, B. L., Capt., USAFR (MC): Comparative effects of aspirin, ACTH and cortisone on acute course of rheumatic fever in young adult males. *Am. J. Med.* 16: 168-180, Feb. 1954.

Jacobs, L.; Fair, J. R., Maj., MC, USA; and Bickerton, J. H., Maj., USAF (MC): Adult ocular toxoplasmosis; preliminary report of parasitologically proved case. *A. M. A. Arch. Ophth.* 51: 287, Mar. 1954.

Leland, L. S., Col., MC, USA, and Hirschl, D.: Epidermolysis bullosa hereditaria letalis in newborn twins. *A. M. A. Am. J. Dis. Child.* 87: 321-327, Mar. 1954.

Levin, H. L., Comdr. (DC) USNR: Psoriasis of hard palate; report of case with discussion of differential diagnosis between psoriasis and leukoplakia. *Oral Surg.* 7: 280-286, Mar. 1954.

Link, J. F., Comdr. (DC) USN: Chondrosarcoma of maxilla. *Oral Surg.* 7: 140-144, Feb. 1954.

Lodmell, E. A., Col., MC, USA: Roentgenological manifestations of injury to genitourinary tract. *Nebraska State M. J.* 39: 84-88, Mar. 1954.

Malone, R. W., Rear Adm. (DC) USN: Recent advances in military dentistry. *Mil. Surgeon* 114: 199-201, Mar. 1954.

McCarthy, E. L., Capt., ANC, USA: Nursing service administration and management program. *Mil. Surgeon* 114: 202-206, Mar. 1954.

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Miller, G., First Lt., MC, USA; Hansen, J. E., Capt., MC, USA; and Pollock, B. E., Lt. Col., MC, USA: Staphylococcus endocarditis; report of three cured cases. *Am. Heart J.* 47: 453-461, Mar. 1954.

Moser, M., Capt., USAF (MC); Babin, S. M., First Lt., MC, USA; Cotts, G. W., First Lt., MC, USA; and Prandoni, A. G.: Acute massive venous occlusion; report of case successfully treated with exercise. *Ann. Int. Med.* 40: 361-368, Feb. 1954.

Parmley, L. F., Jr., Lt. Col., MC, USA; Orbison, J. A., Lt. Col., MC, USA; Hughes, C. W., Lt. Col., MC, USA; and Mattingly, T. W., Col., MC, USA: Acquired arteriovenous fistulas complicated by endarteritis, and endocarditis lenta due to Streptococcus faecalis. *New England J. Med.* 250: 305-309, Feb. 25, 1954.

Reiss, E., Capt., MC, USA, and Artz, C. P., Maj., MC, USA: Current status of research in treatment of burns. *Mil. Surgeon* 114: 187-190, Mar. 1954.

Rowe, R. B., Lt. Col., MC, USA, and McCrea, L. E.: Management of cord bladder in paraplegic patients. *J. Internat. Coll. Surgeons* 21: 192-197, Feb. 1954.

Rusk, H. A., Brig. Gen., USAF (MC): Federal health personnel: needs and utilization. *Mil. Surgeon* 114: 90-93, Feb. 1954.

Shilling, C. W., Capt. (MC) USN: Submarine research. *Mil. Surgeon* 114: 195-198, Mar. 1954.

Spiro, H. M., First Lt., MC, USA; Shropshire, C. N., Capt., USAF (MC); and Fugelso, E. S., Col., MC, USA: Pseudo-hookworm: Trichostrongylus infestation in man. *Am. J. Digest. Dis.* 21: 83-86, Mar. 1954.

Snyder, A., Maj., WMSC, USA: Panel on testing. *Physical Therapy Rev.* 34: 14-15, Jan. 1954.

Trum, B. F., Lt. Col., VC, USA: Decontamination of food stuffs after atomic contamination. *Mil. Surgeon* 114: 111-113, Feb. 1954.

Umiker, W., Comdr. (MC) USN, and Gerry, R. G., Comdr. (DC) USN: Pseudo giant cell tumor (reparative granuloma) of jaw. *Oral Surg.* 7: 113-123, Feb. 1954.

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LETTERS TO THE EDITOR

OSLER'S ADDRESS ON "THE ARMY SURGEON"

To the Editor:—It was very kind of you to bring forth the group photo of Sir William and dear Colonel LaGarde. I congratulate the editor on the appearance of the *Journal* and its contents.

WALTER L. BIERRING, M. D. Chairman
The American Board of Preventive Medicine
Des Moines, Iowa

To the Editor:—Just a word to congratulate you on the selection of Sir William Osler's paper, "The Army Surgeon," which you reprinted in the March issue of the *Journal*. It is splendid, and I hope that you will see fit in the future to reprint other significant addresses which have been presented through the years. I believe that the young medical officer who reads Osler's address cannot be but tremendously stimulated by it.

JOHN L. MATTHEWS, M. D., President
Texas Society of Ophthalmology and Otolaryngology
San Antonio, Tex.

To the Editor:—The copy of the *U. S. Armed Forces Medical Journal* has been received * * * I was much impressed in its contents and particularly in the reprinting of Osler's address at the Army Medical School in 1894. It was my good fortune to study medicine under Osler at Johns Hopkins.

CLARENCE B. FARRAR, M. D., Editor
American Journal of Psychiatry
Toronto, Canada

2,000,000th AIR EVACUATION PATIENT IS SERGEANT, VETERAN OF KOREAN WAR

The two millionth patient in the history of U. S. military aviation to be evacuated by air, Staff Sgt. William F. MacDonnell, USAF, Thomaston, Conn., was brought home from Japan in February aboard a MATS C-97 aircraft. He was attended at Haneda Air Base near Tokyo by Major General John M. Hargreaves, USAF (MC), Surgeon, Far East Air Forces, and inflight to the United States by Major General Harry G. Armstrong, USAF (MC), Surgeon General of the Air Force, who was returning from an inspection trip.

Major General John M. Hargreaves, USAF (MC), right, greets Staff Sgt. William F. MacDonnell, USAF, as he is taken aboard aircraft in Japan by First Lt. Hilda L. Benning, USAF (AFNC), MATS flight nurse.

Sergeant MacDonnell is a combat veteran, who was serving his second tour with Far East Air Forces when he was injured in an aircraft accident near Nagoya in December.

"Sergeant MacDonnell is typical of the 2,000,000 medical evacuees moved by airlift during the past 44 years," General Hargreaves said. "That figure includes persons transported within the United States, from one foreign country to another and from foreign countries to the United States. All those evacuations were made in American military airplanes. More than 326,000 patients were evacuated by the 315th Air Division during the fighting in Korea."

BOOK REVIEWS

REPORT OF WORKING GROUP ON HUMAN BEHAVIOR UNDER CONDITIONS OF MILITARY SERVICE, A Joint Project of The Research and Development Board and the Personnel Policy Board in the Office of the Secretary of Defense. Prepared by *Sidney Adams,* Ph. D.; *Jack Buel,* Colonel, USAF (MSC); *Gordon Barclay,* Colonel, AGC, USA; and *Percival Eaton McDowell,* Captain, USN, Chairman. 426 pages. U. S. Government Printing Office, Washington, D. C., 1953.

This report emphasizes the importance of a continuing, co-ordinated program of research and implementation of research findings in "the handling, treatment, and effective use of military personnel." It is a succinct presentation of the composite ideas and recommendations of many authorities, both in and out of the military service. More than 200 professional specialists in various areas of human behavior are listed as assisting the working group. References are made to specific sources to support particular facts or figures. Of necessity, the writing tends to be categorical, but each position and recommendation is clearly presented.

As a handbook on human behavior it is well organized for ready reference by military officers. The classification of sections is largely in terms of military functions rather than divisions of scientific knowledge. For example, an officer responsible for a training activity will find a section of about 70 pages devoted to military training, within which are seven subsections. Each of the eight main divisions is similarly subdivided.

From the standpoint of the medical services, two of the most important sections are psychiatric selection and classification, and physical examination and standards. Three examples of discussions in these sections: (1) Ways and means of removing the "profit motive" from neuropsychiatric disabilities are considered. (2) It is recommended that each basic training center have a small unit composed of psychiatrists, clinical psychologists, and psychiatric social workers, with the primary function of indoctrinating all permanent command and noncommissioned officer personnel in the problems and methods of handling and evaluating psychoneurotics. (3) It is recommended that all physical standards be validated against actual performance in military situations.

It is strongly recommended that this important book be made available to every officer in the armed services. The comments and recommendations, which represent the considered judgments of the professional specialists in human behavior, should be carefully studied before action is taken at any echelon.—*ANTHONY C. TUCKER, Col., MSC, USA*

MEDICAL HISTORY OF THE SECOND WORLD WAR. SURGERY, edited by *Sir V. Zachary Cope*, M. D. 772 pages; illustrated. Her Majesty's Stationery Office, London, publisher, 1953. Price 80s. net.

"War surgery is traumatic surgery applied under conditions of war, and those conditions cannot be dictated by the surgeon, or even by the high command." Thus does the editor of the second volume in the British World War II medical history approach the problem of surgery in combat.

In World War II there was a steady improvement in surgery which was the sum of many influences, including the fitness of the modern soldier, the short time between wounding and surgical treatment, and the free use of whole blood. Important, too, were the developments in the realm of accessory methods—anesthesia, resuscitation, shock treatment, and the use of antibiotics. The British record of that progress, as unfolded in the present volume, provides a monument to surgeons who in war were "brought back to a study of the basis of their craft, the reactions of the human body to injury and infection."

Individual chapters dealing with the highly specialized aspects of surgery skillfully analyze and synthesize the pattern of surgery as it modified, and was modified by, the evolving technic of warfare. In this period forces were mechanized, new weapons developed. Mechanization, as it affected surgery, meant that troops were fitter when they went into battle, that fewer men were wounded, and that casualties reached the surgeon earlier. Chief weapons were high explosive shells, aerial bombs, mortars, land mines and rockets; cutting weapons virtually disappeared. Common wounds were multiple lacerations and generally retained foreign bodies. In addition, casualties frequently suffered crushing by falling masonry and overturned vehicles, and burns were sustained in tanks and planes, and through carelessness.

These changes in the technics of warfare, together with other advances, were to bring a corollary change in the surgery of wounds, which passed through three phases. The first was the use of closed plaster after the method of Orr and Trueta. In the second, wounds were débrided and drained, the limb immobilized for transport in a padded plaster or some form of plaster box splint, with closure by secondary suture or skin graft as soon as the surface was covered with healthy granulation. Third, the wound was débrided at forward units and closed by delayed primary suture at the base between the fourth and sixth day. These phases, prompted by development of chemotherapy, also represented an evolution "to meet the changing circumstances of war." Each method was right for a certain time and place.

It seems unlikely that any military surgeon would willingly omit this official British military medical history from his basic library. Certainly no medical historian or medical library should be without both this volume and the previously published *Medicine and Pathology*, as

well as the projected units in the series scheduled to cover the Royal Navy, Army, and Royal Air Force, and Civilian Services. The British have set a high standard in their contributions to an increasingly significant field in medical history.—*MAE M. LINK, Ph. D.*

EXISTENTIAL PSYCHOANALYSIS, by *Jean-Paul Sartre*. Translated and with an introduction by *Hazel E. Barnes*. 275 pages. Philosophical Library, New York, N. Y., 1953. Price $4.75.

This book is a translation of selected portions of Jean-Paul Sartre's *Being and Nothingness* (*L'être et le néant*), but is difficult to read because of the modes of expression. Some of the ideas presented, once understood, are fairly simple and sometimes logical. On the whole, however, one tends to become lost in a wilderness of arguments and problems. On the practical side, the book contains a fairly concise comparison of empirical and existential psychoanalysis, although some of the differences are more semantic than fundamental. Sartre, for example, rejects the concept of the unconscious, but substitutes for it a concept of consciousness without knowledge. The discussion on "bad faith" in the latter portions in which falsehood and self-deception are investigated, is interesting. Sartre seems to believe that some of the conventional concepts, such as of ego and id, are too concrete and tend to deny psychic unity. It may be, however, that this criticism indicates failure or inability to understand the value of symbols in communication. The fact that the translator devotes 37 pages to explanatory introduction best indicates the difficulties the reader can expect to encounter.—*WILLIAM H. ANDERSON, Lt. Col., MC, USA*

THE CUTANEOUS MANIFESTATIONS OF SYSTEMIC DISEASES, by *John Godwin Downing*, M. D. 146 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $4.25.

This monograph is a compilation of lectures given to the medical students at Tufts College Medical School and Boston University School of Medicine. Although larger and more comprehensive texts on the subject are available, most of the systemic diseases possessing distinctive cutaneous manifestations are covered in a brief and concise manner.

The book has chapters devoted to disorders of nutrition, blood, allergy, heredity, the endocrine glands, mycosis fungoides and related diseases, the rheumatic diseases, systemic infections, and the scleroses. There is also a chapter on the color of the skin and mucous membranes, and one devoted mainly to sarcoidosis and lupus erythematosus.

Some rare syndromes and diseases, however, are described so briefly as to tend to confuse the nondermatologist. There is no discussion of histopathology or treatment. The monograph is up to date, printed on excellent paper, attractively bound, well illustrated, and has an adequate index and bibliography. It is recommended to medical students and general practitioners.—*KARL V. KAESS, Comdr. (MC) USN*

SEXUAL BEHAVIOR IN THE HUMAN FEMALE, by *Alfred C. Kinsey, Wardell B. Pomeroy, Clyde E. Martin,* and *Paul H. Gebhard.* 842 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1953. Price $8.

This is the much-publicized second progress report of the Kinsey investigation of human sex behavior. The first report was based on case histories of a sample of 5,300 white men. The present volume uses a sample of 5,940 white women living in the United States. Using these case histories, collected by confidential personal interview by one or another of the authors, together with a considerable body of correlative reference material, an attempt has been made to discover what people do sexually, what factors may account for their patterns of sexual behavior, how their sexual experiences have affected their lives, and what social significance there may be in each type of behavior.

Part I of the present volume presents an able defense of the interview method used and of the sample. The limitations of both are clearly set forth, and repeatedly referred to in subsequent sections in interpretation of data. The female sample is inadequately represented by age groups over 50; women with only grade-school education, and high-school graduates over 40; widowed, separated, and divorced women; Catholics and devout Jews; laboring-class women; rural women; and by women from certain geographic areas of the United States. Negroes, military populations, prison populations, and other special groups were not included. Additional data have been collected, and it is hoped that further reports will clarify questions not answered by the present results. There is impressive evidence in the report that this is a highly competent scientific investigation, by cautious researchers, who have followed a thoughtfully planned methodology, have interpreted their data rigorously and conservatively, and have made ample use of consulting scientists in related specialties.

Part II, the main body of the report, covers the types of sexual activity among females. In general the sections present comparative mammalian and anthropologic data, then the detailed survey findings on incidence of the particular type of experience, frequency of experience, frequency of orgasm, technics, and variations related to sociological and educational factors. An important addition, not available in the previous volume, is the incorporation in each section of comparisons of male and female findings. The individual results are too numerous to report here; however, they should be of interest to physicians, psychiatrists, psychologists, and all individuals concerned with personnel management and human affairs.

The comparison of men and women gave rise to the further consideration, in Section III, of anatomic, physiologic, and psychologic factors in sexual responses, and of neural mechanisms and hormonal factors. These chapters achieve an interesting integration of survey data with other scientific knowledge concerning sexual behavior, which enriches their interpretation.

This book is a scientific contribution of major importance. In a culture in which sex pervades so many aspects of life, is the source of so many problems, and the subject of so much confusion and ignorance, accurate knowledge about sexual behavior is needed. Kinsey has discussed only a few important applications, such as problems of marital adjustment, sex problems of unmarried youth, sex education of children, and social control of sexual behavior. The implications for military social groups are not discussed as such, but are apparent, and will, it is hoped, lead to further research and mature reflection by responsible persons.—*SAUL B. SELLS, Ph. D.*

YOU AND YOUR SKIN, by *Norman R. Goldsmith,* M. D. 168 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

This small volume is designed to explain the skin and its diseases to the patient in language that he can understand. Its organization is good and the chapter headings are appropriate and descriptive. The subject is well covered, with scientific nomenclature held to a minimum. Treatment is discussed in a manner that should make the patient more co-operative toward the physician. The book can be safely read by any patient and is recommended for a great many.

The only serious criticism is the brevity of the discussion of atopic dermatitis in the adult. Though mentioned in the chapter, "Troubles From What You Eat," most of the discussion is about infantile eczema. I believe that this subject warrants more space in a book of this kind, with inclusion of some of the material on the neurodermatoses contained in the chapter, "Nerves—The Fifth Column."

The book is recommended as interesting reading for the dermatologist and for what help it may be to other physicians and the layman.
—*LESLIE K. MAC CLATCHIE, Capt. (MC) USN*

DIZZINESS, An Evaluation and Classification, by *David Downs DeWeese,* M. D. 80 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $2.75.

In this monograph the author attempts to clarify the confusion regarding dizziness. He gives a good evaluation of dizziness and outlines a workable classification of its causes. The subject matter covered includes: anatomy and physiology of the statokinetic system, nystagmus, definition and classification of dizziness into nonsystematized dizziness and systematized vertigo, and evaluation and differential diagnosis of dizziness with 16 representative case reports. In the chapter on differential diagnosis he discusses 23 conditions under the heading of nonsystematized dizziness and 20 conditions under the heading of systematized vertigo. There are 26 references and four pages of index.

This is an excellent book for the student and clinician and should be in all medical libraries.—*BYRON G. McKIBBEN, Col., MC, USA*

PROBLEMS IN THE ANATOMY OF THE PELVIS, an Atlas, by *Eduard Ubleh-buth,* Ph. D., with the assistance of *DeWitt T. Hunter,* M. D. 206 pages; 82 illustrations by *William E. Loechel.* J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $10.

Text and atlas are happily combined in this single volume designed for the guidance of advanced students of the detailed anatomy of the pelvis. The structures emphasized are those of particular surgical interest.

The text proper, to which a third of the book is devoted, discusses the surgical anatomy and relationships of the retrovesical space in the male, the musculature of the bladder, and the muscles of the pelvic diaphragm and rectum. The section on the vesical trigone and urinary sphincters is exceptionally well done. Sixteen figures illustrate the concise text, and the adequate historical notes are related to 53 references.

Two thirds of the book consists of a series of 64 original dissection plates, each with a page or two of easily understood explanation and legends. The series provides a unique and much needed aid for correlating gross structure seen in the dissecting room with the histologic picture of the structures revealed.

This atlas-text should be of interest to surgeons and to advanced students who desire to perfect their knowledge of the anatomy of the pelvis by actual dissection.— *BENNETT F. AVERY, Capt. (MC) USN*

CYBERNETICS, Circular Causal and Feedback Mechanisms in Biological and Social Systems, edited by *Heinz von Foerster,* Josiah Macy, Jr. Foundation, New York, N. Y. 184 pages; illustrated. Price $4.

Of primary interest to a limited audience of students of the biologic and social aspects of cybernetics, this book represents a verbatum report of discussions during the symposium in New York City in March 1952. Rambling and at times disjointed, it parades the thought processes of unquestioned experts rather nakedly as they seek logical solutions to problems which in the present state of this infant discipline lend themselves for the most part only to abstract treatment. A gamut of subjects are included, among which are humor in communications, the place of emotions in the feedback concept, and cybernetical aspects of homeostasis. Probably the most interesting aspect of the book is the intentional crossing of disciplines of various phases of engineering with psychology, neurology, physiology, psychiatry, and other branches of science within the framework of the concept of control through feedback. The reader finds it difficult to rid himself of the feeling that content was limited more by the clock rather than by completion of phases of the discussion, and finally, that he has been left high in a cloud without visible means of return to earth.

—*PAUL A. CAMPBELL, Col., USAF (MC)*

CHRONIC ILIAC PAIN IN WOMEN, by *H. B. Atlee,* M. D. 65 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $2.50.

This book is another excellent volume in the series of monographs of American Lectures in Gynecology and Obstetrics. It presents an important subject which is a frequent complaint of a high percentage of women, many of whom are operated on without being helped.

The author has a charming, pleasant, and lucid style. He stresses nonspecialist psychiatry and the importance of knowing each patient as a person. His approach to the subject and his philosophy revives the feeling that the practice of medicine is still an art.

This is a useful book for every doctors' library.

—*SAUL L. AVNER, Lt. Col., MC, USA*

PHYSIOLOGY, by *Rolland J. Main,* Ph. D., revised by *Alfred W. Richardson,* Ph. D. 2d edition. 474 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1953. Price $7.

This remarkably concise but comprehensive summary of primarily human physiology is now, after seven years, brought out in a greatly improved form. The book still deals "with the abstracted fundamental concepts of advanced physiology," but is reorganized into body systems—basic, metabolic, fluid, and integrative—plus homeostatic mechanisms.

There are important new chapters on renal physiology, metabolism, and the autonomic nervous system. In addition, recent advances are reported in endocrinology, the dynamics of body fluids, the role of the hypothalmus, and respiration, to name only a few. Modernized concepts have been incorporated into every chapter.

For those not familiar with this text, it is a fairly complete summary, useful for review and for bringing one's knowledge of physiology up to date. The subjects stressed are those that are of clinical importance, involve recently discovered information, or are complex and often poorly understood. Human rather than comparative physiology is accented, and no historical material, experimental details, or references are included.

Some of the illustrations, of which 26 are new in this revision, are ingeniously designed to clarify difficult concepts; others, such as the simple, unlabeled view of the heart (fig. 24), appear superfluous in an advanced text of this type. The format is pleasing, with clear type and a volume of handy size for easy reading. A most useful feature is the unusually extensive index.

This second edition should prove even more valuable than the first to upper-class medical students and physicians, in learning what is new in physiology and relearning what has been forgotten.

—*BENNETT F. AVERY, Capt. (MC) USN*

FIRST REPORT OF THE USAF MEDICAL SERVICE, 1 July 1949 - 30 June 1952. Prepared by the Office of the Surgeon General, United States Air Force, Washington, D. C. 287 pages. U. S. Government Printing Office, Washington, D. C., 1954. Price $0.70.

The *First Report of the USAF Medical Service,* prepared by the historical staff of the Office of the Surgeon General, U. S. Air Force, describes in detail the problems and accomplishments of the new medical service of the Air Force during its first three years. The *Report* is divided into three sections: The Office of the Surgeon General, the Air Force Commands, and a statistical analysis, "Health of the Air Force."

Any military medical service is called upon to provide for all health phases of combat readiness in addition to its established medical activities in connection with the military population. This first historical report describes how the Air Force Medical Service in its first three years developed its potential to provide for an Air Force expansion from 48 to 95 combat wings. Faced initially with the major problems of personnel procurement, and later with that of hospital construction, the Medical Service by the end of three years had made considerable progress in its development.

It is significant that the level of health in the Air Force at the close of the period was higher than it had ever been in any large military force in history and, according to Surgeon General Harry G. Armstrong, in each successive year had exceeded its own previous record.— *ROBERT J. BENFORD, Col., USAF (MC)*

MUSIC THERAPY, edited by *Edward Podolsky,* M. D. 335 pages; illustrated. Philosophical Library, New York, N. Y., 1954. Price $6.

In this valuable contribution to psychiatry the effect of music on the mind and the emotions is described and evaluated throughout practically the entire spectrum of psychiatric disorders, ranging from simple disturbances of mood to the major psychoses. Such disturbances are considered separately, and the application of specific musical compositions recommended where indicated. Thus, the book might be considered as a "musical materia medica" and therapeutic guide in the use of music as an instrument in psychotherapy. It may be of interest and value to physicians other than psychiatrists, because chapters are devoted to such problems as gastric disturbances, cardiovascular disease, and the use of music therapy by the surgeon and a section entitled "Music in Military Medicine" has been included.

Aside from its interest to all physicians, the musician and music lover will find much of the material familiar and written in understandable language. The many references to musical compositions, both classical and popular, with their technical and artistic implications, will be of special interest to the serious musician. This book, with its imposing list of contributors, is probably the most authoritative and valuable work of its kind to date, and as such it is highly recommended.

—*CHARLES T. BROWN, Lt. Col., MC, USA*

NEW BOOKS

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be selected for review in a later issue.

CLINICAL NEUROLOGY, by *Bernard J. Alpers,* M. D., Sc. D. (Med.); Professor of Neurology, Jefferson Medical College, Philadelphia; Neurologist to the Jefferson, Pennsylvania, and Wills Hospitals, Philadelphia. 3d edition. 880 pages; 243 illustrations. F. A. Davis Co., Philadelphia, Pa., 1954.

THE ROLE OF EDUCATIONAL INSTITUTIONS IN MILITARY RESEARCH, by *Robert E. Cron,* Jr., B. S., B. S. in C. E., M. S., C. E. Carnegie Press Occasional Papers Number 3, Dec. 1953. 22 pages. Carnegie Institute of Technology, Pittsburgh, Pa., 1953. Price $1.

PREVENTIVE DENTISTRY, by *Joseph C. Muhler,* D. D. S., Ph. D., Assistant Professor, Department of Chemistry and School of Dentistry, Indiana University, Bloomington, Ind.; *Maynard K. Hine,* D. D. S., M. S., Dean, School of Dentistry, Indiana University, Indianapolis, Ind.; and *Harry G. Day,* Sc. D., Chairman, Department of Chemistry, Indiana University, Bloomington, Ind. 336 pages; 56 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1954. Price $8.50.

ORAL AND FACIAL DEFORMITY, by *C. Kerr McNeil,* Ph. D., L. D. S., Senior Lecturer, University of Glasgow; Examiner in Dental Prosthetics and Dental Mechanics, University of Glasgow; Hon. Consultant, Glasgow Dental Hospital and Royal Hospital for Sick Children, Glasgow; with a foreword by Professor *James Aitchison,* Director of Dental Education, University of Glasgow. 127 pages; illustrated. Pitman Publishing Corp., New York, N. Y., 1954. Price $5.

THE ROENTGENOLOGIST IN COURT, by *Samuel Wright Donaldson,* M. D., F. A. C. R., Roentgenologist, St. Joseph Mercy Hospital, Ann Arbor, Mich. 2d edition. 358 pages. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $7.75.

PSYCHOSOMATIC CASE BOOK, by *Roy R. Grinker,* M. D.; Director, Institute for Psychosomatic and Psychiatric Research and Training of the Michael Reese Hospital; Clinical Professor of Psychiatry, University of Illinois, College of Medicine; and *Fred P. Robbins,* M. D.; Associate Psychiatrist, Michael Reese Hospital; Staff Member, The Chicago Institute for Psychoanalysis. 346 pages. The Blakiston Co., Inc., New York, N. Y., 1954. Price $6.50.

BACTERIOLOGY FOR MEDICAL STUDENTS AND PRACTITIONERS, by *A. D. Gardner,* D. M., F. R. C. S., F. R. C. P.; Regius Professor of Medicine, Oxford Student of Christ Church; One Time Professor of Bacteriology and Fellow of University College, Oxford. 4th edition. Oxford Medical Publications. 271 pages; illustrated. Oxford University Press, New York, N. Y., 1953. Price $3.

COMMUNITY PROBLEMS, by *Jennette R. Gruener,* Ph. D., School of Social Work, University of Missouri, and *Deborah MacLurg Jensen,* R. N., M. A., Instructor in Nursing Education and Sociology, Department of Adult Education, University of Missouri. 336 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1954. Price $4.

THE NATURAL MAN, As Inferred Mainly from Field Studies of Men and Chimpanzees, by *Clarence Leuba,* Professor and Chairman, Department of Psychology, Antioch College. Doubleday Papers in Psychology, DPP 1. Consulting Editor, *Eugene L. Hartley,* Professor of Psychology, The City College, New York. 70 pages; illustrated. Doubleday & Co., Inc., Garden City, N. Y., 1954. Price $0.95.

THE HISTORICAL ROOTS OF LEARNING THEORY, by *Horace B. English,* Professor of Psychology, Ohio State University. Doubleday Papers in Psychology, DPP 2. Consulting Editor, *Eugene L. Hartley,* Professor of Psychology, The City College, New York. 21 pages; illustrated. Doubleday & Co., Inc., Garden City, N. Y., 1954. Price $0.65.

THE YEAR BOOK OF UROLOGY (1953-1954 Year Book Series), edited by *William Wallace Scott,* M. D., Ph. D., Director, James Buchanan Brady Urological Institute, The Johns Hopkins Hospital; Urologist-in-Charge, The Johns Hopkins Hospital; Professor of Urology, The Johns Hopkins University School of Medicine. 375 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1954. Price $6.

A PRIMER OF CONGESTIVE HEART FAILURE, by *George E. Burch,* M. D., F. A. C. P., Henderson Professor of Medicine, Tulane University School of Medicine; Physician-in-Chief, Tulane Unit, Charity Hospital; Consultant in Cardiovascular Diseases, Ochsner Clinic; Visiting Physician, Touro Infirmary, New Orleans, La. American Lecture Series, Publication Number 190, A Monograph in American Lectures in Internal Medicine. Edited by *Roscoe L. Pullen,* M. D., F. A. C. P., Professor of Medicine, and Dean, University of Missouri School of Medicine, Columbia, Mo.; Consultant to the Surgeon General, Department of the Army, Washington, D. C. 126 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $4.

PNEUMONIA, by *Hobart A. Reimann,* M. D., Visiting Professor of Medicine, The American University of Beirut, Lebanon; Formerly, Professor of Medicine, Jefferson Medical College; Formerly, Professor of Medicine, University of Minnesota. American Lecture Series, Publication Number 160, A Monograph in The Bannerstone Division of American Lectures in Chest Diseases. Edited by *J. Arthur Myers,* M. D., Ph. D., Professor of Medicine and Public Health, University of Minnesota Medical and Graduate Schools, Minneapolis, Minn. 236 pages; 19 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $5.75.

THE CYCLOPEDIA OF MEDICINE, SURGERY, SPECIALTIES. Editor-in-Chief: *George Morris Piersol,* M. D., Professor of Medicine and Director of the Center for Research and Instruction in Physical Medicine, Graduate School of Medicine; and Professor of Physical Medicine, School of Medicine, University of Pennsylvania. Assistant editor: *Edward L. Bortz,* M. D., Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania; Past President, American Medical Association. 3d edition, revised. 15 volumes, including index volume. 14,460 pages; profusely illustrated with full page color plates and other engravings. F. A. Davis Co., Philadelphia, Pa., 1953.

CLINICAL ORTHOPTIC PROCEDURE, A Reference Book on Clinical Methods of Orthoptics, by *William Smith,* O. D., Associate Instructor in Optometry and Instructor of Orthoptics and Visual Training, Massachusetts College of Optometry, Boston, Mass. 2d edition. 524 pages; 91 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1954. Price $10.

FEELINGS AND EMOTIONS, by *Lawrence K. Frank,* Formerly Director, Caroline Zachry Institute of Human Development. Doubleday Papers in Psychology, DPP 3. Consulting Editor, *Eugene L. Hartley,* Professor of Psychology, The City College, New York, N.Y. 38 pages. Doubleday & Co., Inc., Garden City, N. Y., 1954. Price $0.85.

HUMAN FACTORS IN THE DESIGN OF HIGHWAY TRANSPORT EQUIPMENT, A Summary Report of Vehicle Evaluation, by *Ross A. McFarland,* Ph. D.; *Jack W. Dunlap,* M. A.; *William A. Hall,* M. A.; and *Alfred L. Moseley,* M. A. 66 pages; illustrated. Harvard School of Public Health, 695 Huntington Ave., Boston, Mass., 1953.

THE DYNAMICS OF VIRUS AND RICKETTSIAL INFECTIONS, International Symposium, edited by *Frank W. Hartman,* M. D.; *Frank L. Horsfall,* Jr., M. D.; and *John G. Kidd,* M. D. Sponsored by the Henry Ford Hospital, Detroit, Mich., and held at the Hospital October 21, 22, and 23, 1953. 461 pages; illustrated. The Blakiston Co., Inc., New York, N. Y., 1954. Price $7.50.

CLINICAL INTERPRETATION OF LABORATORY TESTS, by *Raymond H. Goodale,* M. D., Pathologist at the Worcester Hahnemann Hospital, Fairlawn Hospital, and Worcester County Sanatorium, Worcester, Mass., Clinton Hospital, Clinton, Mass., Harrington Memorial Hospital, Southbridge, Mass.; Consulting Pathologist, Veterans Administration Hospital, Rutland Heights, Mass. 3d edition. 720 pages, 105 illustrations, 6 in color. F. A. Davis Co., Philadelphia, Pa., 1954. Price $6.50.

CARCINOMA OF THE COLON, by *Leland S. McKittrick,* M. D., F. A. C. S., Clinical Professor of Surgery, Harvard Medical School; Surgeon-in-Chief, New England Deaconess Hospital; Consulting Visiting Surgeon, Massachusetts General Hospital; Consultant in Surgery, Peter Bent Brigham Hospital; and *Frank C. Wheelock,* Jr., M. D., F. A. C. S., Assistant in Surgery, Massachusetts General Hospital; Assistant in Surgery, Harvard Medical School. American Lecture Series, Publication Number 189, A Monograph in American Lectures in Abdominal Viscera. Edited by *Lester R. Dragstedt,* M. D., Chairman, Department of Surgery, University of Chicago, the School of Medicine, Chicago, Ill. 94 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $3.25.

THE JEALOUS CHILD, by *Edward Podolsky,* M. D., Department of Psychiatry, Kings County Hospital, Brooklyn, N. Y. 147 pages. Philosophical Library, New York, N. Y., 1954. Price $3.75.

SURGICAL INFECTIONS, Prophylaxis, Treatment, Antibiotic Therapy, by *Edwin J. Pulaski,* M. D., D. M. Sc. (Surgery), Lieutenant Colonel, Medical Corps, United States Army; Deputy Director, Division of Surgery, Walter Reed Army Medical Center; Assistant Chief, Surgical Service, Walter Reed Army Hospital. American Lecture Series, Publication Number 170, A Monograph in The Bannerstone Division of American Lectures in Surgery. Edited by *Michael E. DeBakey,* M. D., Professor of Surgery and Chairman of the Department of Surgery, Baylor University College of Medicine, Houston, Tex.; and *R. Glen Spurling,* M. D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. 315 pages; 10 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $7.75.

THE YEAR BOOK OF THE EYE, EAR, NOSE AND THROAT, (1953-1954 Year Book Series). The Eye, edited by *Derrick Vail,* M. D., D. Oph. (Oxon.), F. A. C. S., F. R. C. S. (Hon.); Professor and Director, Department of Ophthalmology, Northwestern University Medical School; Attending Ophthalmologist, Passavant Memorial Hospital; Past Attending Ophthalmologist, Cook County Hospital. The Ear, Nose and Throat, edited by *John R. Lindsay,* M. D., Professor of Otolaryngology, The University of Chicago, The School of Medicine. 455 pages; illustrated. The Year Book Publishers, Chicago, Ill., 1954. Price $6.

METHODS IN MEDICAL RESEARCH, Volume VI. *J. Murray Steele,* editor-in-chief. Section I, Some Methods of Studying Human Genetics, edited by *Antonio Ciocco;* Section II, Methods in Environmental Research, edited by *Ray G. Daggs;* Section III, Statistics in Medical Research, edited by *Donald Mainland;* Section IV, Design and Construction of Metabolism Cages, edited by *Arnold Lazarow.* 271 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1954. Price $7.

THE YEAR BOOK OF ORTHOPEDICS AND TRAUMATIC SURGERY (1953-1954 Year Book Series), edited by *Edward L. Compere,* M. D., F. A. C. S., F. I. C. S.; Professor and Chairman, Department of Bone and Joint Surgery, Northwestern University Medical School; Senior Attending Orthopedic Surgeon and Chairman, Department of Orthopedic Surgery, Wesley Memorial Hospital; Consultant Orthopedic Surgeon, Chicago Memorial, Augustana, Henrotin and Veterans Administration Research Hospital. 362 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1954. Price $6.

ACUTE RENAL FAILURE, by *Arthur Grollman,* Ph. D., M. D., F. A. C. P.; Professor and Chairman, Department of Experimental Medicine, Lecturer in Pharmacology and Toxicology, Southwestern Medical School of the University of Texas; Attending Physician, Parkland Hospital; Consultant in Internal Medicine, Baylor University Hospital; Consultant in Biochemistry and Physiology, Veterans Administration Hospital, Dallas, Tex. American Lecture Series, Publication Number 192, A Monograph in American Lectures in Internal Medicine. Edited by *Roscoe L. Pullen,* M. D., F. A. C. P., Professor of Medicine and Dean, University of Missouri School of Medicine, Columbia, Mo.; Consultant to the Surgeon General, Department of the Army, Washington, D. C. 96 pages; 6 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $4.

PROFESSIONAL NURSING, Trends and Relationships, by *Eugenia Kennedy Spalding,* R. N., M. A., D. H. L.; Professor of Nursing Education, Division of Nursing Education, Teachers College, Columbia University; Formerly Director, Division of Nursing Education, Indiana University, Bloomington, Ind.; Associate Professor of Nursing Education, School of Nursing Education, The Catholic University of America, Washington, D. C.; Associate Director, United States Cadet Nurse Corps, Public Health Service, Federal Security Agency, Washington, D. C. 5th edition, revised and reset. 636 pages; 52 illustrations. J. B. Lippincott Co., Philadelphia, Pa., 1954. Price $5.

A MANUAL ON CARDIAC RESUSCITATION, by *Robert M. Hosler,* M. D., F. A. C. S., Cleveland, Ohio. 183 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1954. Price $4.

RECONSTRUCTIVE SURGERY OF THE EYELIDS, by *Wendell L. Hughes,* M. D., F. A. C. S., Hempstead, N. Y. 2d edition. 260 pages; 268 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1954. Price $8.50.

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